12 JUL 1979

TECHNICAL MANUAL

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS

INTERCOMMUNICATION SET AN/VIC-1(V)

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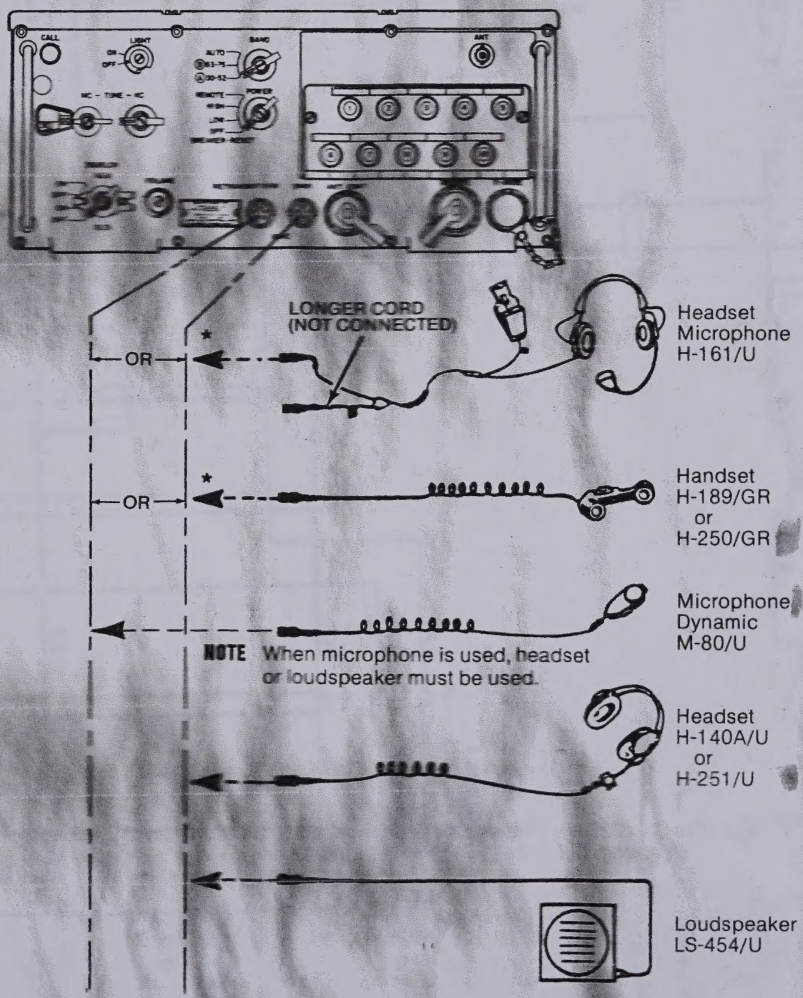
SEPTEMBER 1973

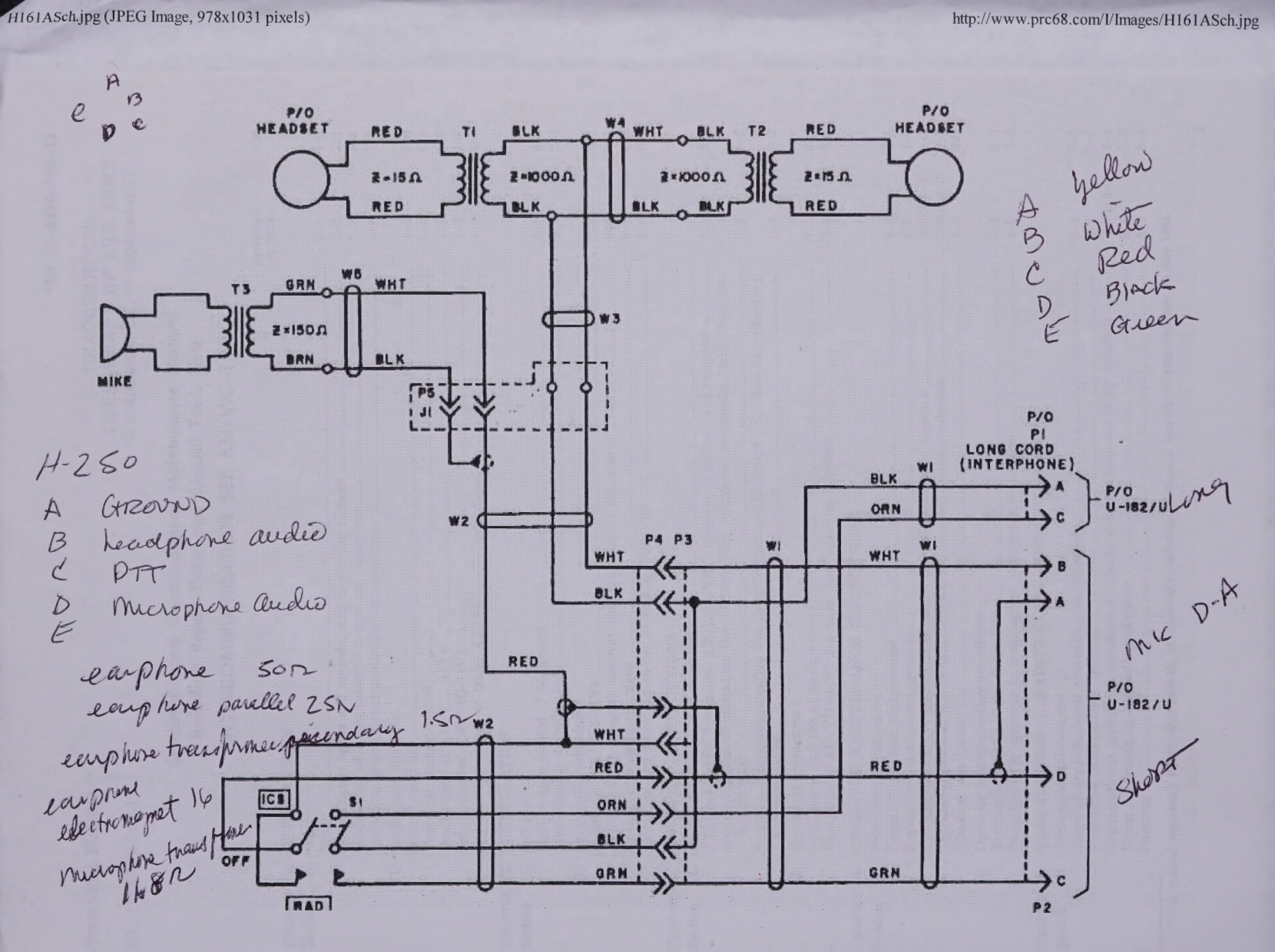
2-2. RECEIVER-TRANSMITTER RT-246(*)/VRC AND RT-524(*)/VRC – Continued

CHECK AUDIO ACCESSORIES CONNECTION TO RT

The number and type of audio accessories you will use is determined by your mission.



*May be connected to either the RETRANSMIT R/W or SPKR jack on the RT.



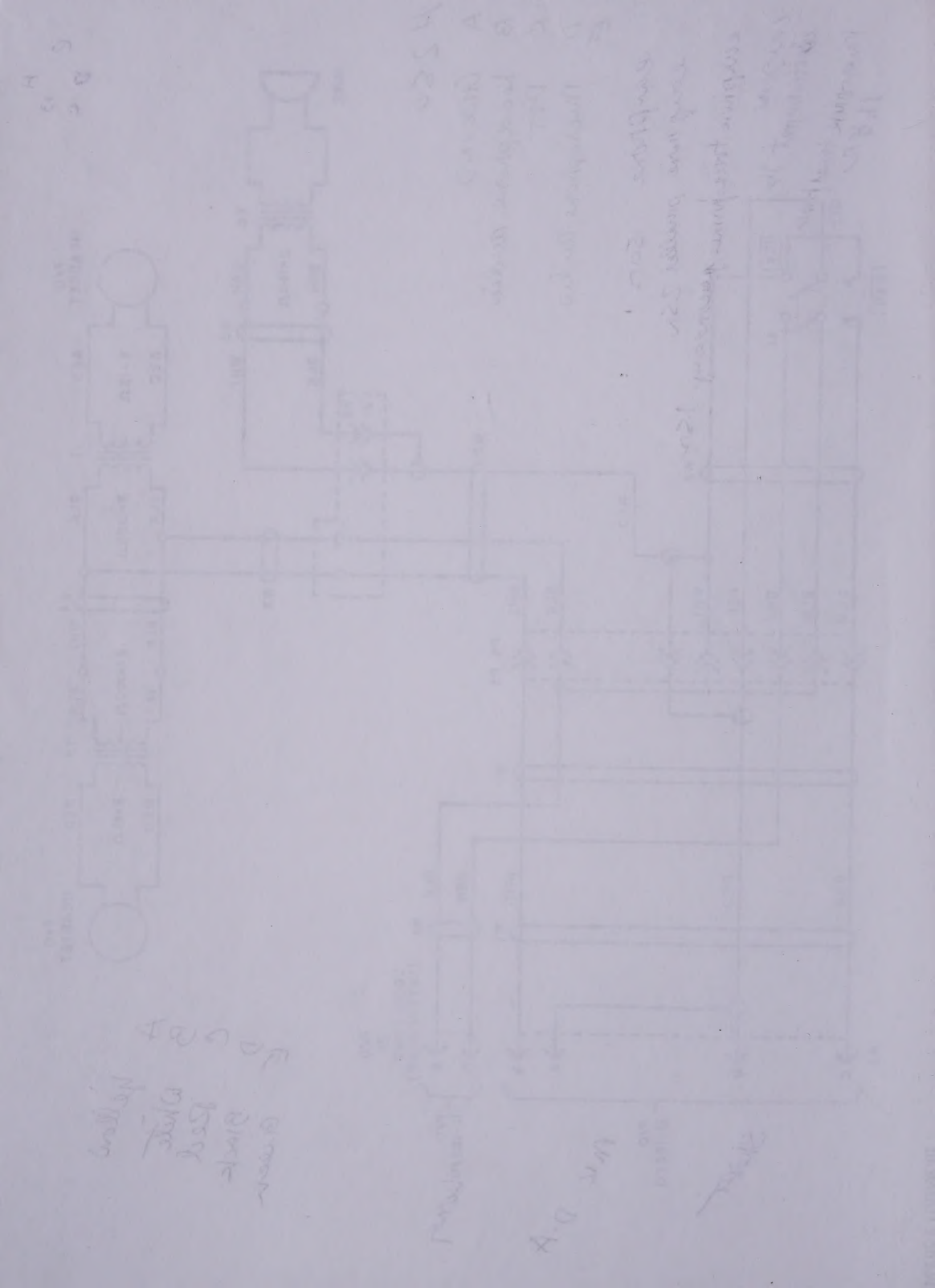
A yellow
B White
C Red
D Black
E Green

H-250
A GROUND
B headphone audio
C PTT
D Microphone Audio
E

earphone 50Ω
earphone parallel 25Ω
earphone transformer secondary 1.5Ω
earphone electromagnet 16
microphone transformer 150Ω

mic D-A

Short



TECHNICAL MANUAL
No. 11-5830-340-12

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *28 September 1973*

Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools Lists

INTERCOMMUNICATION SET AN/VIC-1(V)

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* This manual supersedes TM 11-5830-340-12, 11 June 1962, including all changes, and TM 11-5830-340-20P, 15 May 1962.

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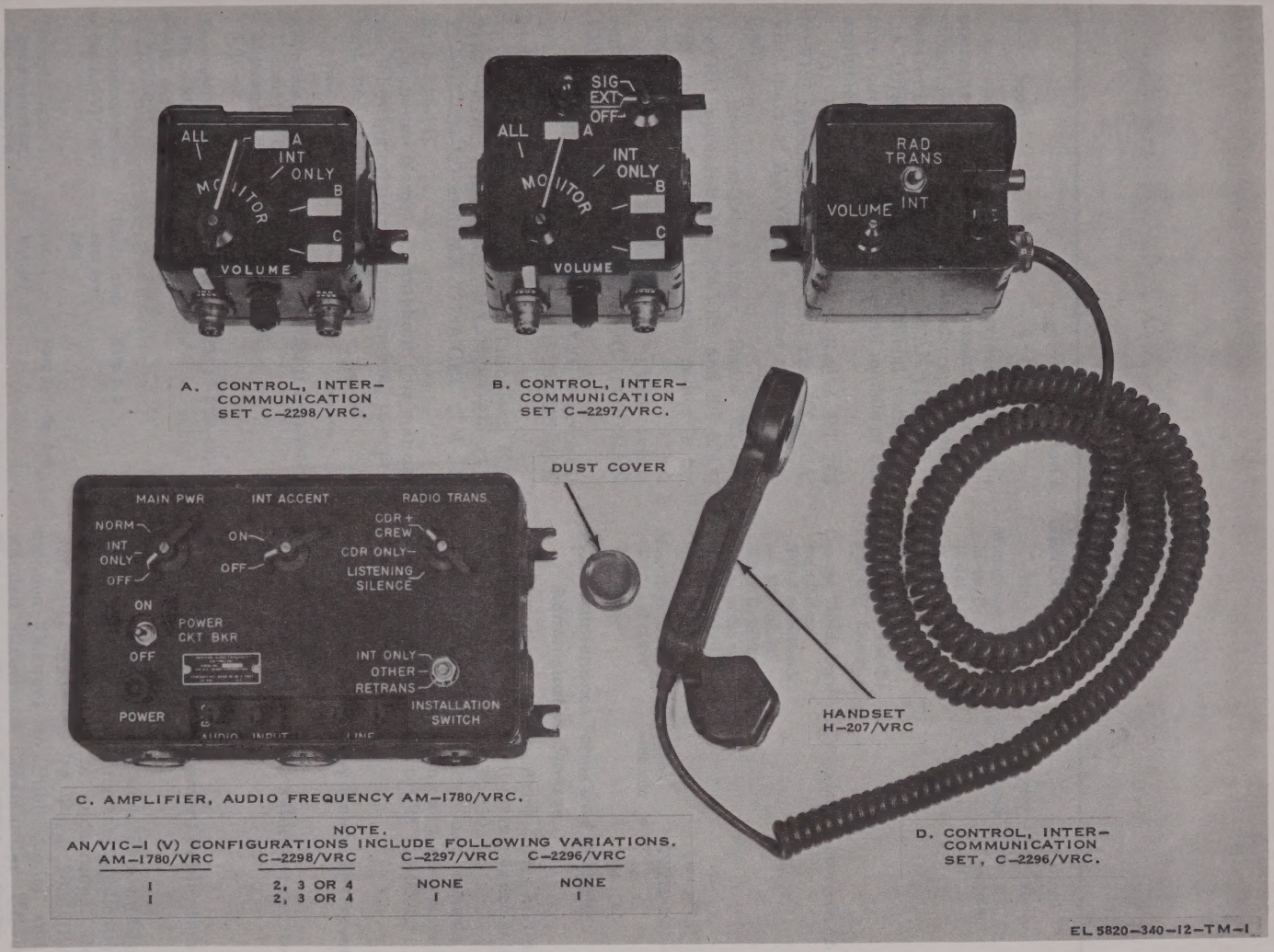


NOTE.
AN/VIC-1 (V) CONFIGURATIONS INCLUDE FOLLOWING VARIATIONS.

AM-1780/VRC	C-2298/VRC	C-2297/VRC	C-2296/VRC
1	2, 3 OR 4	NONE	NONE
1	2, 3 OR 4	1	1

Figure 1-1. Intercommunication Set AN/VIC-1(V), components.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1–1. Scope

a. General. This manual provides operation, operator and organizational maintenance instructions, and organizational repair parts lists for Intercommunication Set AN/VIC–1(V).

b. Official Nomenclature. Official nomenclature followed by (*) indicates all models of the equipment; thus,

(1) Receiver-Transmitter, Radio RT–246 (*)/VRC represents RT–246/VRC and RT–246A/VRC (part of AN/VRC–12 series radios (*c* below)).

(2) Receiver-Transmitter, Radio RT–524 (*)/VRC represents RT–524/VRC and RT–524A/VRC (part of AN/VRC–12-series radios (*c* below)).

(3) Receiver, Radio R–442(*)/VRC represents R–442/VRC and R–442A/VRC (part of AN/VRC–12-series radios (*c* below)).

(4) Power Supply PP–2953(*)/U represents PP–2953/U, PP–2953A/U, and PP–2953B/U (TM 11–6130–233–12).

(5) Suppressor, Electrical Transient MX–7778(*)/GRC represents MX–7778/GRC (TM 11–5915–223–12) and MX–7778A/GRC (TM 11–5915–224–14).

c. Common Names. Throughout this manual, the following common names are used to represent the indicated equipment

Item	*Common name*	*Reference*
Radio Sets AN/VRC–12 and AN/VRC–43 through AN/VRC–49.	AN/VRC–12–series radios	TM 11–5820–401–12
Receiver-Transmitters, Radio RT–246(*)/VRC and RT–524 (*)/VRC.	Receiver-transmitters	TM 11–5820–401–12
Intercommunication Set AN/VIC–1(V).	Radio-intercom system	Para 1–5
Controls, Intercommunication Set C–2296/VRC, C–2297/VRC, and C–2298/VRC.	Control box(es)	Para 1–7, fig. 1–1
Microphone, Dynamic M–80/U; Headsets H–140A/U and H–251/U; Headset-Microphone H–161/U; Loudspeaker IS–454/U; and CVC helmet.	Audio accessories	Para 6–3, fig. 3–5 and 3–6.
Combat Vehicle Crewman Helmet T56–6 with Headset-Microphone Kit MK–1039/U as the audio accessory installed in it.	CVC helmet	Para 6–3*e*, fig. 3–7
Mountings MT–1029/VRC and MT–1898/VRC.	Radio mounts	TM 11–5820–401–12

1–2. Maintenance Forms and Records; Administrative Storage

a. Department of the Army forms and procedures used for equipment maintenance shall be those prescribed in TM 38–750.

b. For procedures, forms and records, and inspection required during administrative storage of equipment, refer to TM 740–90–1.

1–3. Destruction of Army Materiel to Prevent Enemy Use

For information on this subject, refer to TM 750–244–2.

1–4. Reporting of Equipment Publication Improvements

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Report should be made on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to Commander US Army Electronics Command, ATTN: AMSEL–MA–CR, Fort Monmouth, NJ 07703.

Section II. DESCRIPTION AND DATA

1–5. Purpose and Use

Intercommunication Set AN/VIC–1(V) provides voice communication between members of a crew-served weapon and between crewmembers of a vehicle. The AN/VIC–1(V) also provides crewmembers with the facility to communicate on the radios that may be associated with the AN/VIC–1(V) in the vehicle.

a. The AN/VIC–1(V) is used alone in mobile weapons, such as Gun, 175 MM, Self-Propelled, Full-Tracked, M107; Howitzer, 8 inch, Self-Propelled, Full-Tracked, M110; Howitzer, 105 MM, Self-Propelled, M105; and Howitzer, 155 MM, Self-Propelled, M155.

b. The AN/VIC–1(V) is used with vehicular radios (para 1–9*e*) in such combat vehicles as tanks, armored personnel carriers, and armored command posts.

(1) In such vehicles as armored personnel carriers and howitzers, the AN/VIC–1(V) consists of Amplifier, Audio Frequency AM–1780/VRC and Control, Intercommunication Set C–2298/VRC for each crewmember.

(2) In such combat vehicles as tanks, the AN/VIC–1(V) also includes Control, Intercommunication Set C–2297/VRC for the driver, and Control, Intercommunication Set C–2296/VRC mounted on the outside of the vehicle.

(3) The AN/VIC–1(V) is part of the electronic equipment harness of howitzers and combat vehicles ((1) and (2) above). The harness includes the interconnecting cables between components of the AN/VIC–1(V). In the combat vehicles ((2) above), the harness also includes the mounts for the radios, interconnecting cables for the radios, and power cables. Refer to paragraph 1–9 for information on equipment required to make the AN/VIC–1(V) operational.

(4) Communication on the AN/VIC–1(V) system is provided for the crewmembers by means of CVC helmets or headset-microphone sets.

c. The AM–1780/VRC and C–2296/VRC can be connected through field wires to local battery telephones to enable the telephone users to communicate with the crewmembers.

1–6. Technical Characteristics

a. Control Boxes C–2296/VRC, C–2297/VRC, and C–2298/VRC.

Frequency range	500 to 3,000 Hz.
Intercom function	Provides communication between crewmembers.
Radio function	Provides communication on all radios connected to AM–1780/VRC.
Audio accessories:	
Microphone impedance	150 ohms ±15 percent.
Headset and loudspeaker impedance	600 ohms ±20 percent.
LINE binding posts of C–2296/VRC	600 ohms ±20 percent.
Power requirements	22 to 30 volts dc.

b. Amplifier, Audio Frequency AM–1780/VRC.

Frequency range	500 to 3,000 Hz.
Power control	Controls dc power to radios and control boxes.
Radio function	Provides control of radios selected by control boxes.
Intercom function	Provides communication (intercom) between control boxes.
Circuit impedances:	
Microphone circuits	150 ohms ±20 percent.
Headset and loudspeaker circuits	150 ohms ±20 percent.
LINE binding posts	600 ohms ±20 percent.
AUDIO INPUT binding posts	5,000 ohms.
Radio transmitter microphone input circuit	150 ohms ±20 percent.
Radio receiver audio output circuits	150 ohms ±20 percent.
Power requirements	22 to 30 volts dc.

1–7. Components of AN/VIC–1(V)

The configurations of the AN/VIC–1(V) are not operational, as such, but require interconnecting cables, dc power, and audio accessories; see paragraph 1–9 for details.

a. Single Package.

Item	Federal stock No.	Dimensions (Inches) Height	Depth	Width	Weight (lb)	Qty
Intercommunication Set AN/VIC-1(V); this configuration includes the following:	5830-856-3273					
Amplifier, Audio Frequency AM-1780/VRC [a]	5820-892-3342	3¾	5¾	9⅔	8	1
Control Intercommunication Set C-2298/VRC [a]	5820-892-3329	4½	3¾	3¾	2½	2

[a] Each unit includes a bag of mounting hardware.

b. Electronic Equipment Harness. The AN/VIC-1(V), as part of the electronic equipment harness of various vehicles (para 1-5*b*(3)), includes some of the following items.

(1) *AN/VIC-1(V) components.*

Item	Federal stock No.	Dimensions (inches) Height	Depth	Width	Weight (lb)	Qty
Amplifier, Audio Frequency AM-1780/VRC [a]	5820-856-3342	3¾	5¾	9⅔	8	1
Control, Intercommunication Set C-2298/VRC [a]	5820-892-3339	4½	3¾	3¾	2½	See note *b* below.
Control, Intercommunication Set C-2296/VRC [a]	5820-892-3337	----------				See note *c* below.
Control, Intercommunication Set C-2297/VRC [a]	5820-892-3338	----------				See note *c* below.

[a] The components are installed in the vehicle with the required mounting hardware.
[b] One C-2298/VRC is provided for each crewmember.
[c] In some vehicles, one C-2297/VRC is provided for the driver's position and one C-2296/VRC is mounted on the outside of the vehicle.

(2) *Interconnecting cables.* Typical interconnecting cables, of the proper lengths, are shown in figures 2-4 through 2-8.

(3) *Radio equipment.* When the particular vehicle is authorized radio equipment, the electronic equipment harness includes radio mounts MT-1029/VRC and MT-1898/VRC (fig. 2-5 through 2-7). The radio components are supplied by the using organization.

(4) *MX-7778(*)/GRC.* The MX-7778(*)/GRC is part of the electronic equipment harness ((3) above).

c. Installation Kit. Installation kits which include the AN/VIC-1(V) are provided for wheeled and similar type vehicles (para 1-9*b*).

1-8. Description of AN/VIC-1(V)

(fig. 1-1)

a. Amplifier, Audio Frequency AM-1780/VRC.

(1) The AM-1780/VRC is the main junction box for the AN/VIC-1(V). It provides control of the dc power to the associated control boxes (*b*, *c*, and *d* below), and to the radio system that may be connected to the AM-1780/VRC. It also amplifies and controls the audio signals in the intercommunication and radio circuits.

(2) All operating controls are provided on the front panel. Ten receptacles are provided on the top, bottom and sides for connection to the control boxes and the radios. Two pairs of binding posts are provided on the front panel for connection to a telephone and the audio output of an auxiliary radio. Mounting lugs are provided on the sides. Captive screws hold the gasket-sealed back cover. All controls and receptacles are waterproof.

b. Control, Intercommunication Set C-2298/VRC.

(1) When an audio accessory is connected to the C-2298/VRC, the crewmember can elect, by means of the MONITOR switch and the audio accessory controls, to communicate on the intercom circuit with other crewmembers, or on the radio(s) connected to the AM-1780/VRC.

(2) The MONITOR switch is located on the front panel; the VOLUME control is located on the bottom of the box. A cable receptacle on each side of the box provides connection to the AM-1780/VRC (or another C-2298/VRC). Receptacles on the bottom provide connection to audio accessories. Mounting lugs are provided on the sides. Captive screws hold the gasket-sealed back cover.

c. Control, Intercommunication Set C-2296/VRC.

(1) The C–2296/VRC is provided with Handset H–207/VRC to enable the user to communicate on the intercom circuit with other crewmembers, or on the radio(s) connected to the AM–1780/VRC.

(2) The radio and intercom control switch and VOLUME control are located on the front panel. A cable receptacle on the left side provides connection through the vehicle wiring to the C–2297/VRC located inside the vehicle. A cable receptacle on the right side provides connection of the cable assembly to an external call light mounted in the cover of the box containing the C–2296/VRC. A pair of binding posts provide connection to a telephone. Mounting lugs are provided on the sides. Captive screws hold the gasket-sealed back cover.

(3) The H–207/VRC has a push-to-talk switch, a dynamic microphone and an earphone, and a retractile cord connected to the C–2296/VRC.

d. Control, Intercommunication Set C–2297/VRC.

(1) When an audio accessory is connected to the C–2297/VRC, the crewmember can elect, by means of the MONITOR switch and the audio accessory controls, to communicate on the intercom circuit with other crewmembers, or on the radio(s) connected to the AM–1780/VRC.

(2) The MONITOR and SIG-EXT-OFF switches are located on the front panel; the VOLUME control is located on the bottom of the box. When the SIG-EXT-OFF switch is in EXT position, the C–2296/VRC (*c* above) is enabled to become part of the radio and intercom circuits. A cable receptacle on the left side provides connection to the AM–1780/VRC; the cable receptacle on the right side provides connection through the vehicle wiring to the C–2296/VRC. Receptacles on the bottom provide connection to audio accessories. Mounting lugs are provided on the sides. Captive screws hold the gasket-sealed back cover.

1–9. Equipment Required to Make AN/VIC–1(V) Operational

a. General. Items required to make the AN/VIC–1(V) operational are supplied by various means, depending on the particular vehicle in which it is installed. Dc power (22–30 volts dc) is provided by the vehicular electrical system.

(1) Supply Bulletin (SB) 11–131 lists the parts and Federal stock numbers of the vehicular electronic equipment harnesses and installation kits which contain the AN/VIC–1(V), and the accessory kits required for the harness installation.

(2) The electronic equipment harness *is part of* tracked vehicles (*c* below). It includes the AN/VIC–1(V), radio mounts, interconnecting and power cables, mounting brackets for the various components, and the MX–7778(*)/GRC. The basic radio set components are provided by the using organization.

(3) Accessory kits complement the electronic equipment harnesses. They include audio accessories, some interconnecting cables, the whip antenna parts for use with Receiver, Radio R–442(*)/VRC (used in some AN/VRC–12-series radio configurations), and instructions for installing the harness and the accessory kit. The accessory kits are not part of the electronic equipment harness; thus, they are removed and used on another vehicle when the vehicle is turned in.

(4) Installation kits contain appropriate audio accessories, radio mounts, interconnecting cables and hardware necessary to mount the AN/VIC–1(V) in the vehicle. The kits are not part of the vehicle; thus, they are removed and used on another vehicle when the vehicle is turned in. Installation instructions for the kits are provided in TM 11–2300–372–14–2.

(5) A general purpose installation kit is provided for non-vehicular installation. It includes audio accessories, radio mounts, interconnecting cables, power cable, and general purpose mounting hardware. A power supply such as Power Supply PP–2953(*)/U is required to operate the equipment.

b. Wheeled Vehicles. A representative wheeled vehicle in which the AN/VIC–1(V) is used is Truck, Cargo, 1¼ Ton, 6 × 6, M561. The items required to install the equipment are provided in the installation kit (*a*(4) above).

c. Tracked Vehicles.

(1) Representative tracked vehicles include: Tank, Full Tracked, M60A1; Carriers, Personnel, Armored, M113 and M114; Carrier, Command Post M577; and howitzers (para 1–5*a*).

(2) The items required for installation and operation of the AN/VIC–1(V) are provided in the electronic equipment harness and the accessory kit (*a*(2) and (3) above) for the particular vehicle.

(3) The audio accessory for some tracked vehicles is contained in the CVC helmets provided for each of the crewmembers.

d. Marine Craft. Generally, installation harnesses in marine craft are considered in the same category as those for tracked vehicles (*c*

above); and once installed, are considered as part of the marine craft.

e. Compatible Radio Sets. Following are various vehicular radio sets which may be connected to the AN/VIC-1(V).

(1) AN/VRC-12-series radios (TM 11-5820-401-12).

(2) Radio Sets AN/VRC-53, AN/VRC-64, AN/GRC-125, and AN/GRC-160 (TM 11-5820-498-12).

(3) Radio Teletypewriter Set AN/VSC-3 (TM 11-5815-332-15).

CHAPTER 2

INSTALLATION

Section I. GENERAL

2–1. Service Upon Receipt of Equipment

When packed for shipment, the components of the AN/VIC–1(V) are packed in a single package (para 1–7*a*) or are part of the installation kit package (para 1–7*c*). When required, the cartons are packed in wooden boxes.

a. Unpacking. If provided, open the wooden boxes; remove the contents from the cartons.

b. Checking Equipment.

(1) Inspect the equipment for possible damage. Report damaged equipment on DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700–58.

(2) Use the packing list to check the contents of the carton.

(3) Report shortages on SF 364 (Report of Item Discrepancy (ROID)) as prescribed in AR 735–11–2.

c. Shelter Requirements. The components of the AN/VIC–1(V) are rugged and weatherproof units that can withstand extremes of cold and heat. Accordingly, no particular protective requirements are applicable.

2–2. Nonvehicular Installations

a. When the AN/VIC–1(V) is not used in a vehicle, a general purpose installation kit is available (SB 11–131). It is Installation Kit, Electronic Equipment MK–1453/VIC–1(V). It includes the AM–1780/VRC, four C–2298/VRC's, H–161A/U, interconnecting and power cables, and instructions for installing the equipment.

b. A dc power supply, such as Power Supply PP–2953(*)/U, capable of supplying 22 to 30 volts dc at approximately 1 ampere is required.

Section II. INSTALLATION PROCEDURES

2–3. Installing AN/VIC–1(V)

a. General.

(1) For wheeled vehicles (para 1–9*b*), installation instructions for mounting the AN/VIC–1(V) and the parts of the installation kit are provided in the installation kits.

(2) For tracked vehicles (para 1–9*c*), the AN/VIC–1(V), and the mounts for the radios, if applicable, are part of the vehicle electronic equipment harness (para 1–9*a*(2)). The prescribed layout and cabling details are provided in the publication covering the vehicle in which the harness is installed. Instructions for installing the accessory kit components (para 1–9*a*(3)) are provided in the accessory kit.

b. Cabling. Refer to paragraph 2–5 for general cabling instructions.

c. Determining Position of Power Control Link in Radio Mounts. When the AN/VIC–1(V) is used with radio equipment in the vehicle (fig. 2–5, 2–6, and 2–7), the position of the power control link in the radio mounts is usually so set that the AM–1780/VRC MAIN PWR switch becomes the main power control for the radio and radio-intercom systems.

(1) When the AN/VIC–1(V) is used with one of the radio sets of the AN/VRC–12 series (para 1–6*a;* fig. 2–5 and 2–6), the procedures for setting the power control link in the radio mounts is provided in TM 11–5820–401–12.

(2) When the AN/VIC–1(V) is used with Radio Sets AN/VRC–53, AN/VRC–64, AN/GRC–125, or AN/GRC–160 (fig. 2–7), the procedures are provided in TM 11–5820–498–12.

2–4. AN/VIC–1(V), General Removal and Replacement Procedures

a. Removal. As a general rule, when an item is removed, replace the mounting screws with its lockwashers and nut in place in the mounting bracket or screw hole. Retain the cable straps and screws that hold the cables in the same way.

(1) To remove a cable connector, refer to the general instructions in paragraph 2–5.

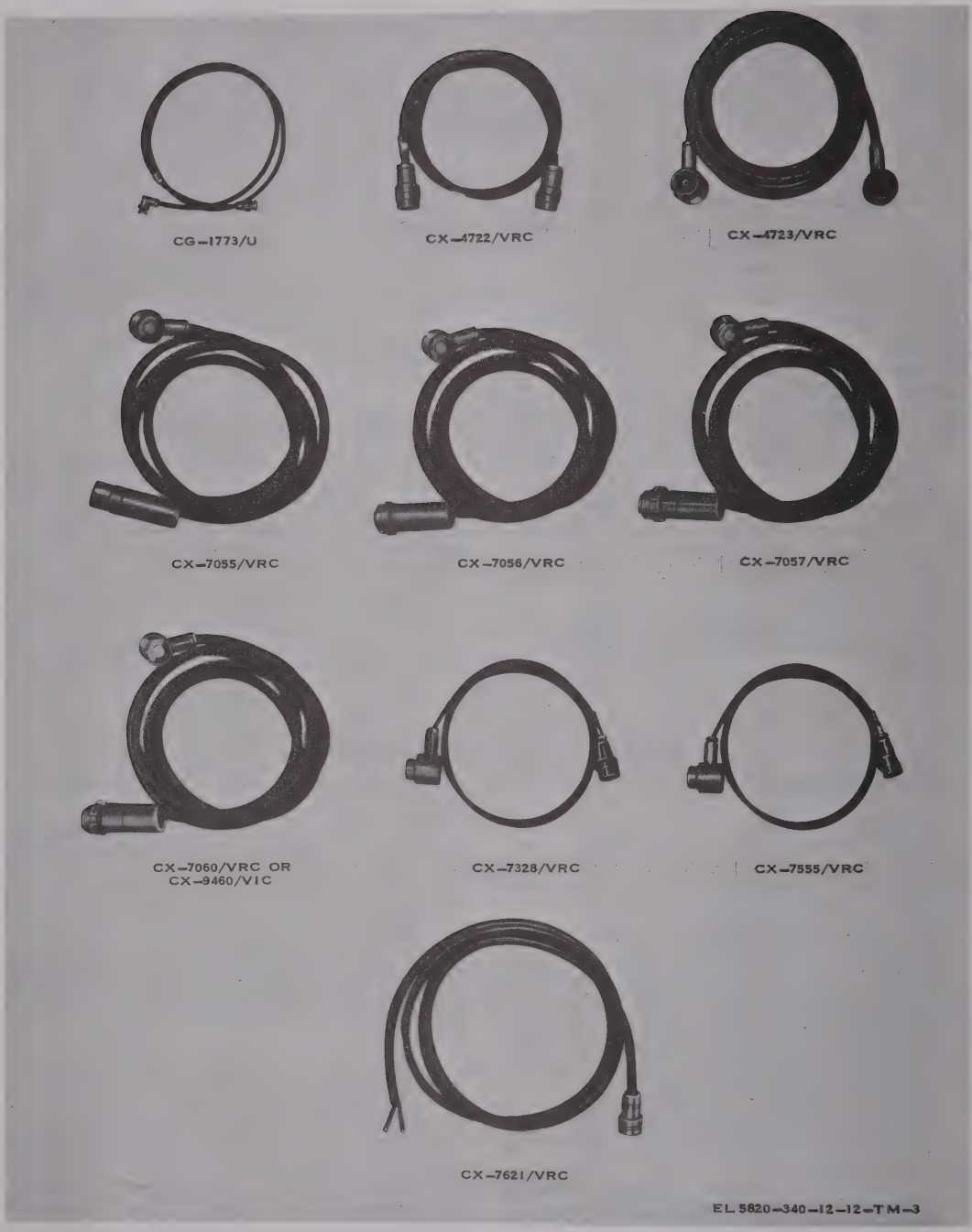


Figure 2–1. Typical cable assemblies used with AN/VIC–1(V) and with radios used with AN/VIC–1(V).

(2) To remove equipment, loosen the equipment mounting screws and remove the unit from its mounting.

b. Replacement.

(1) Attach the equipment to its assigned mounting bracket. Use the prescribed mounting screws, lockwashers, and nuts. Make sure one lockwasher is under the head of the screw and another under the nut.

(2) Attach the cable connector to the equipment cable receptacle (para 2–5*b*).

c. Dust Covers. Install dust covers (C, fig. 1–1) on unused equipment cable receptacles. This will prevent dirt and moisture from imparing the circuits connected to the receptacles.

2–5. General Cabling Instructions

Refer to paragraph 1–9 for general discussion concerning equipment required to make the AN/VIC–1(V) operational.

a. Identifying Cable Connectors. To identify the cable connectors with the equipment receptacle to which they are attached, inscribe the equipment receptacle reference designation on a tag, label, or decal and attach it to the cable connector. A set of decals containing equipment receptacle designations (J501, J509, J71, etc.) is available. The set is identified as a marking set under Federal Stock No. 5975–918–8164 (SB 11–131). Attach the proper label to the neck of each cable connector while it is attached to the equipment receptacle.

b. Connecting Cables.

(1) Before connecting a cable to the equipment receptacle, observe the following:

(*a*) Check to see that the connector pins are straight; straighten them if necessary.

(*b*) Check to see that the locknuts of both sides of the connector are tight; tighten them if necessary (fig. 5–1).

(*c*) Check to see that the wingnuts on the connector are tight; tighten them if necessary (C, fig. 2–2).

(*d*) Replace the cable when the insulation is damaged or the insulation has come loose from the gland nut in the connector (fig. 5–1).

(2) To attach the cable connector to the equipment receptacle, raise the wingnut, position the connector at the angle that permits the keyway in the connector to slip into the key in the receptacle; then press the cable connector into the receptacle. Rotate the wingnut to lock the connector to the receptacle; and lower the wingnut.

(3) Route the cable to the assigned equipment receptacle.

(*a*) Follow the route prescribed in the installation instructions.

(*b*) Make sure there is no slack in the cable between the cable clamp points. Check to see that the cable clamps grip the cable securely and that the screws and lockwashers holding the clamps are tight.

(4) The following information applies to the AM–1780/VRC and the equipment associated with it (fig. 2–4 through 2–7).

(*a*) The cable connection from the MT–1029/VRC of radio "A" must be attached to J501 on the AM–1780/VRC. If it is attached to other AM–1780/VRC receptacles, the AM–1780/VRC circuit components may be damaged.

(*b*) The cable from the commander's control box must be attached to receptacle J504 on the AM–1780/VRC. This arrangement is required to insure that the commander can assume control of the radio circuits thus overriding control of the system by other crewmembers using the intercom system.

(*c*) The cables to the AM–1780/VRC from the crewmember control boxes (C–2298/VRC and C–2297/VRC) can be connected indiscriminately to the receptacles (J505, J506, and J507) on the top of the AM–1780/VRC.

(*d*) In some vehicles, the connection from the driver's C–2297/VRC or C–2298/VRC is provided by direct cable connection using cable assembly CX–4723/VRC. In other vehicles, the connection is made by other cable types to the vehicle wiring system.

(*e*) The cable connections to the C–2298/VRC's can be made to either the left or right cable receptacle.

(*f*) One or more C–2298/VRC's can be connected to a C–2298/VRC that is connected to the AM–1780/VRC, using CX–4723/VRC's for the purpose. All C–2298/VRC's operate independently of each other when so connected.

(*g*) The left receptacle, J701, of the C–2299/VRC must be connected to J511 on the AM–1780/VRC; J702, in turn, is then connected to J509 on the AM–1780/VRC.

(*h*) In some tank installations, a branched cable, connected on one end to the commander's C–2298/VRC, is terminated in two receptacles in the cupola to which the commander's audio accessory is connected.

c. Field Telephones and Intervehicle Connections. Operation under the arrangements in (1) and (2) below is covered in paragraph 3–5*c*.

(1) *Field telephone connections.* A local battery telephone can be connected to the intercom circuits of the AN/VIC–1(V) to enable the

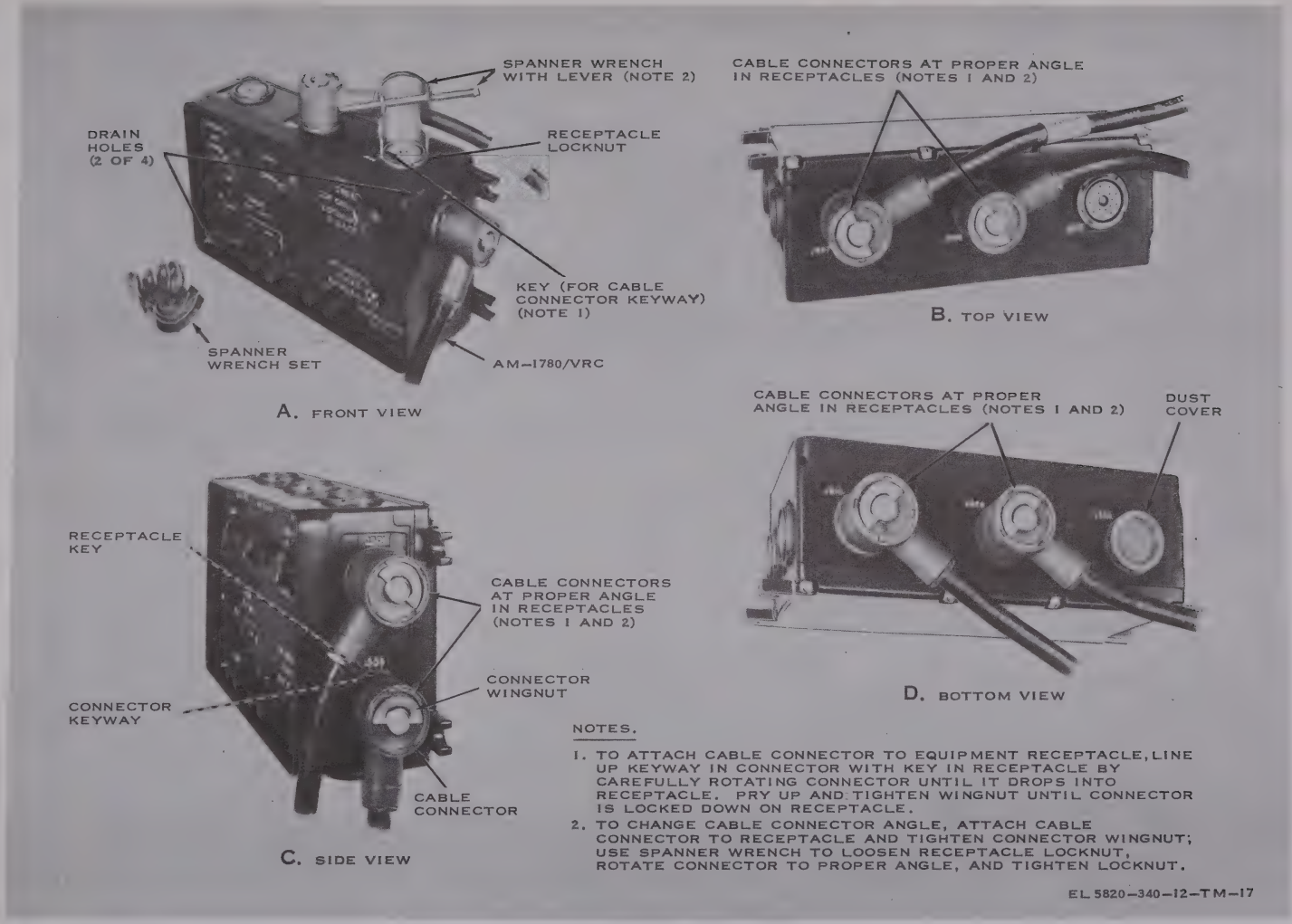


Figure 2–2. AM–1780/VRC cabling details.

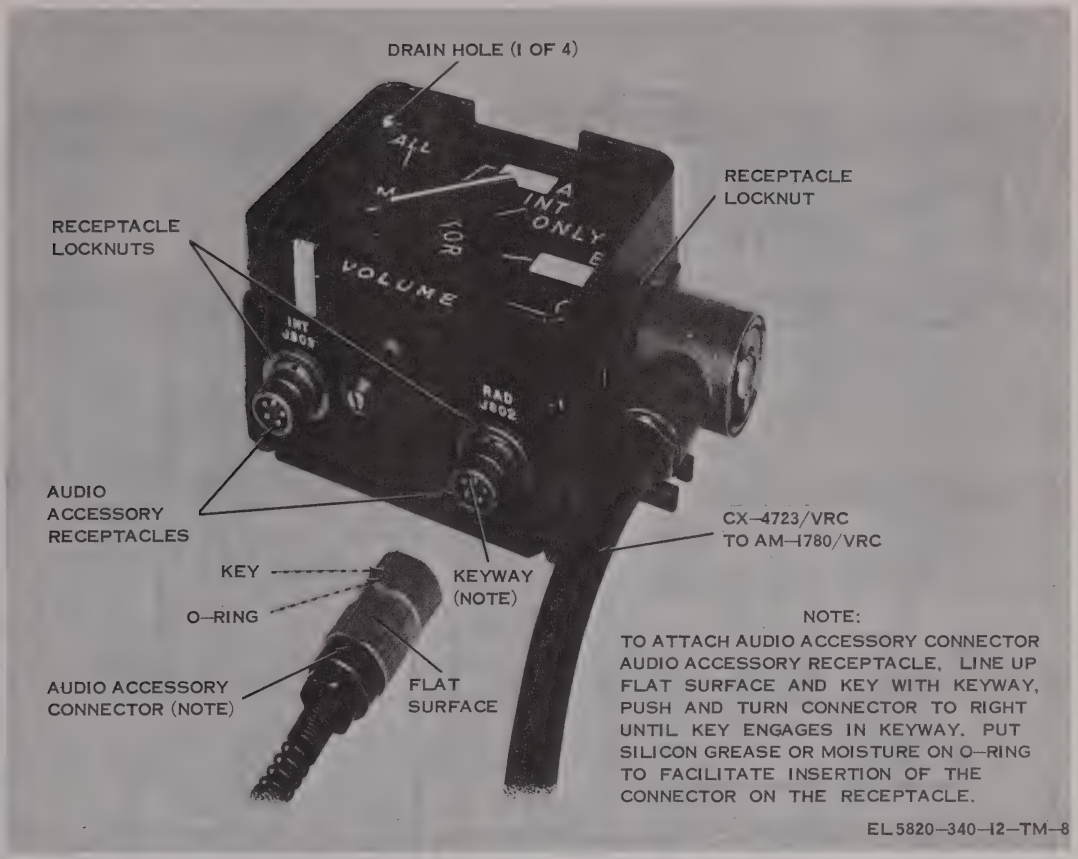


Figure 2-3. Control box cabling details.

telephone user to communicate with the crewmembers. Connect the wires from the field telephone to the LINE binding posts of the AM-1780/VRC or the C-2296/VRC (fig. 2-4 through 2-7).

(2) *Intervehicle connections.* The intercom circuits of different vehicles can be interconnected to enable the crewmembers to communicate with each other. This is accomplished by connecting field wires between the LINE binding posts of the AM-1780/VRC or C-2296/VRC of one vehicle with the AM-1780/VRC or C-2296/VRC of the other vehicle.

d. Cabling Diagrams.

(1) Figure 2-4 shows typical cabling of AN/VIC-1(V) when it is not used in conjunction with radio equipment (para 1-5*a*).

(2) Figures 2-5, 2-6, and 2-7 show typical cabling of AN/VIC-1(V) when it is used with a radio set in a vehicle (para 1-5*b*).

2-6. Installing and Removing Power Cable CX-4720/VRC

Cable Assembly, Power, Electrical CX-4720/VRC (fig. 2-8) provides connection between the dc power source and the AM-1780/VRC (fig. 2-4), or between the dc power source and the MT-1029/VRC when radio equipment is used with the AN/VIC-1(V) (fig. 2-5 through 2-7). The CX-4720/VRC is available in various lengths depending on the distance between the power outlet and the equipment.

a. Attaching Terminal Lugs and Bendix Connector to CX-4720/VRC. Depending on the vehicle in which the equipment is used, either

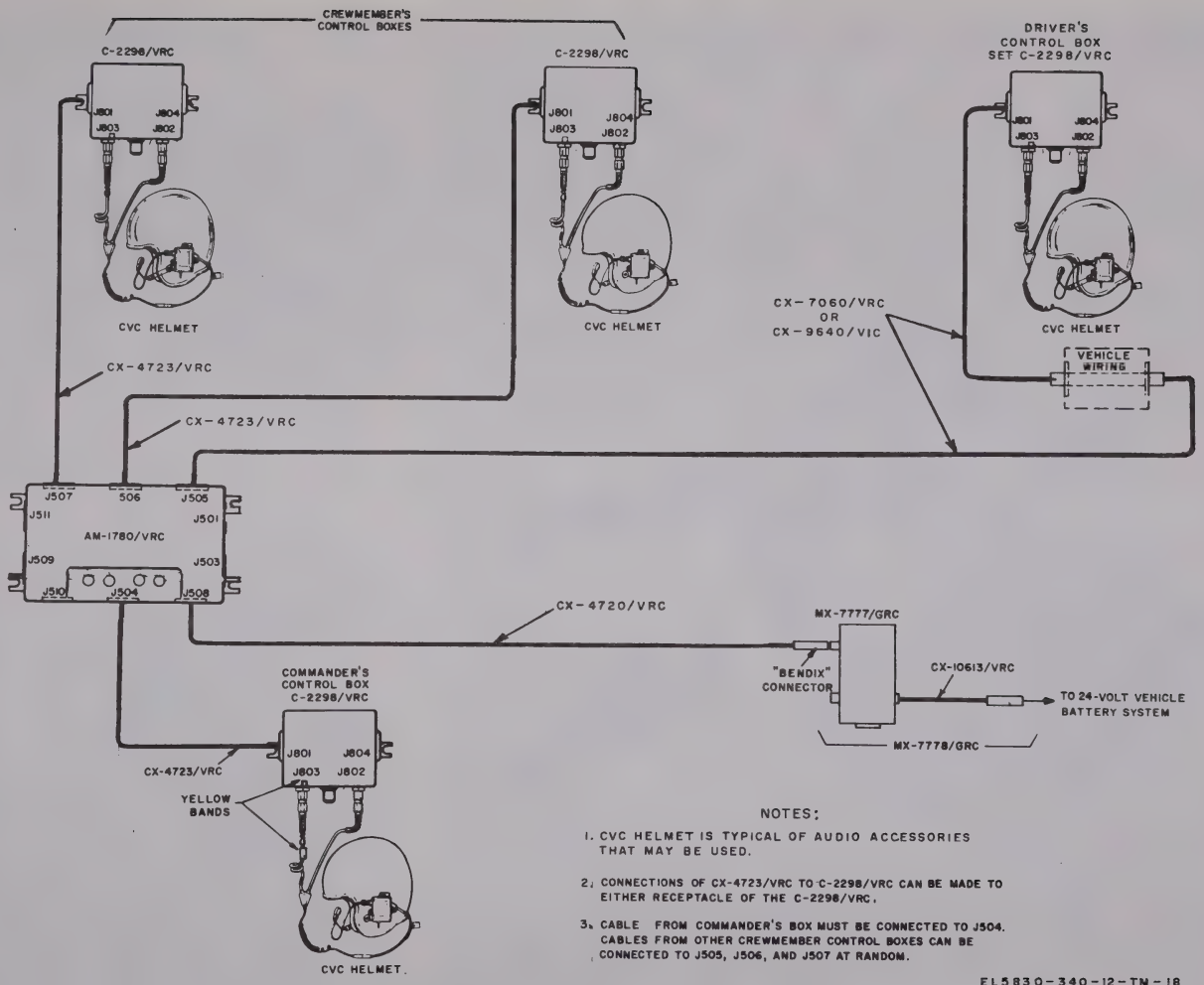


Figure 2-4. Typical cabling of AN/VIC-1(V) when radio equipment is not provided.

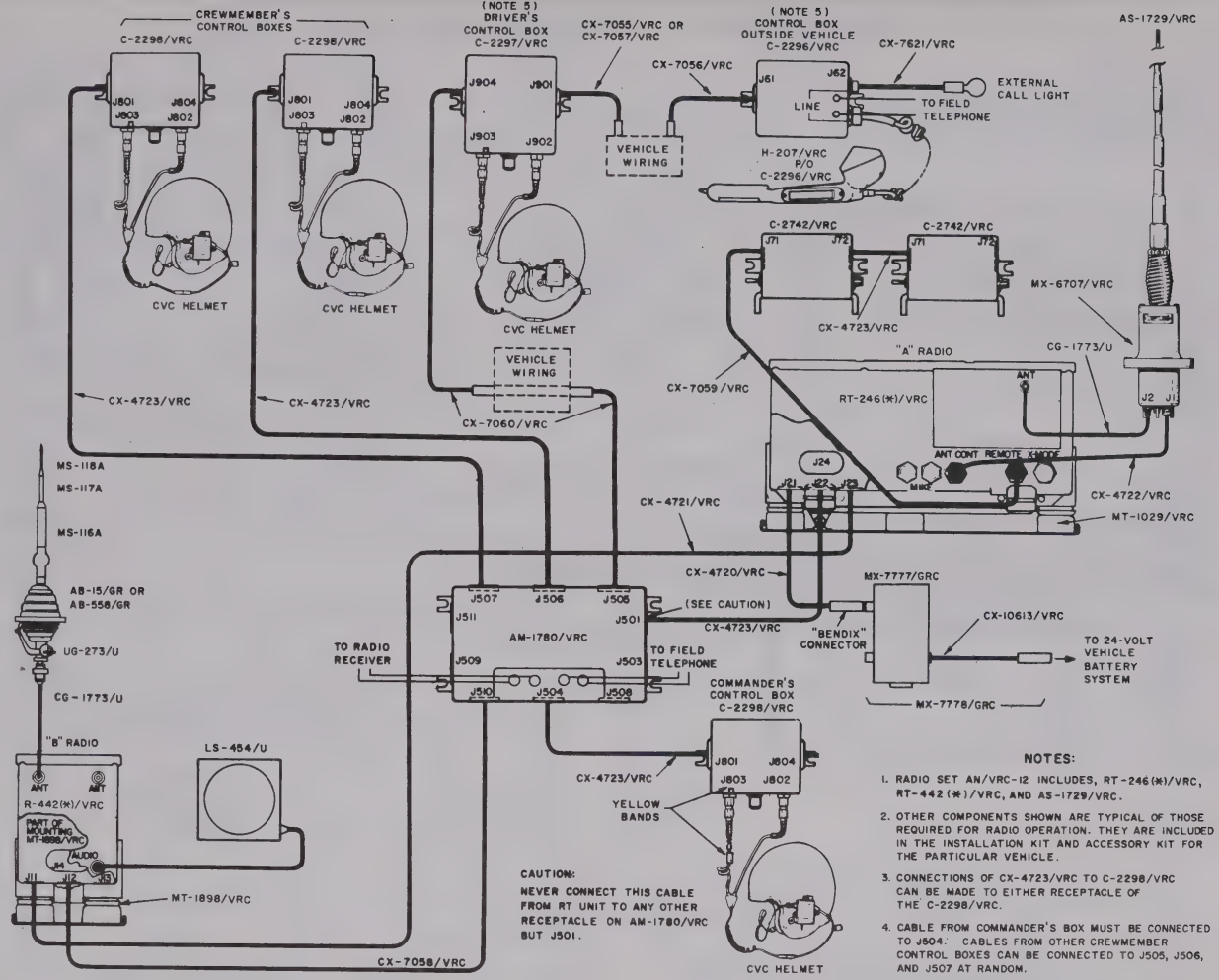
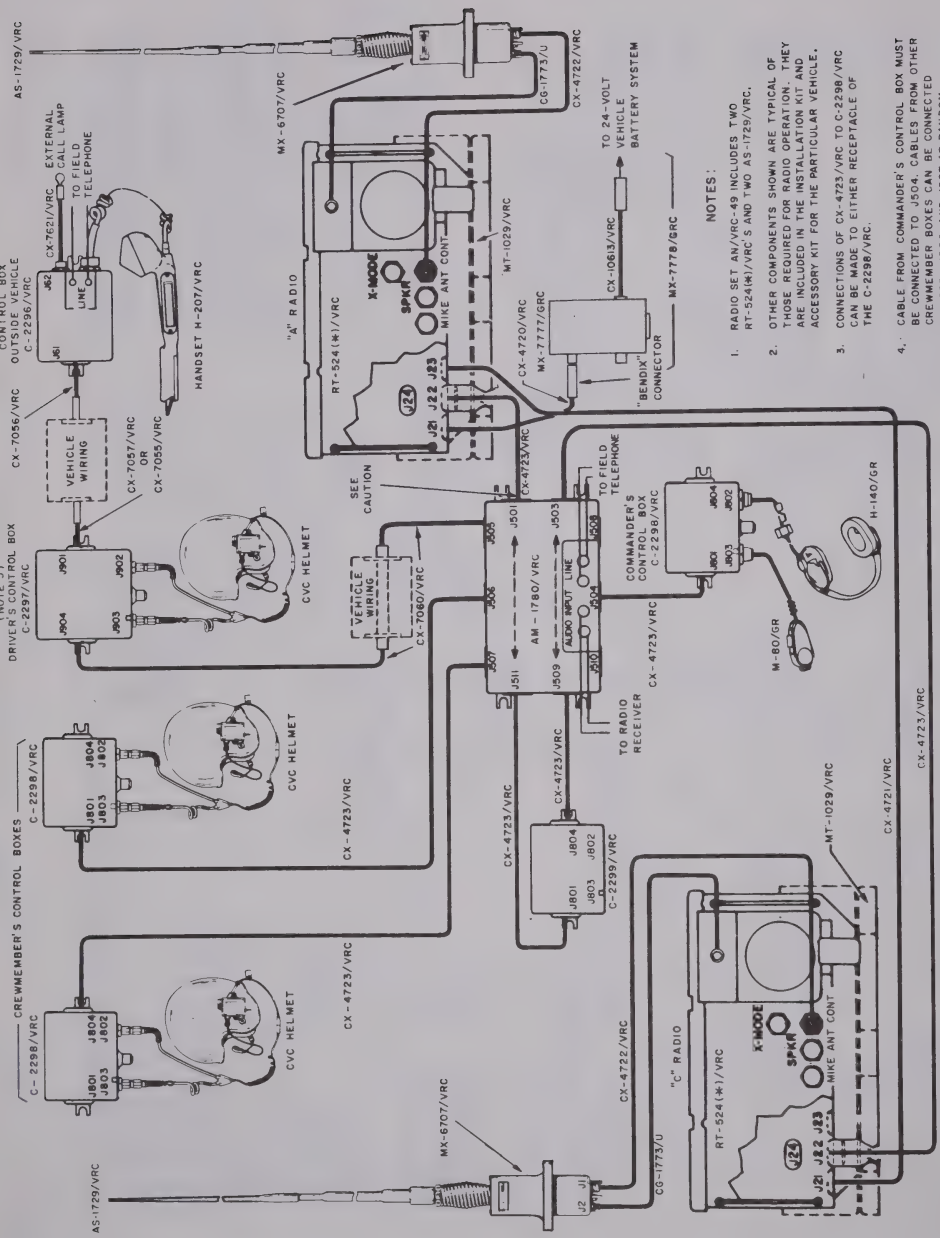


Figure 2–5. Typical cabling of AN/VIC–1(V) and Radio Set AN/VRC–12.



NOTES:

1. RADIO SET AN/VRC-49 INCLUDES TWO RT-524(*)/VRC'S AND TWO AS-1729/VRC.
2. OTHER COMPONENTS SHOWN ARE TYPICAL OF THOSE REQUIRED FOR RADIO OPERATION. THEY ARE INCLUDED IN THE INSTALLATION KIT AND ACCESSORY KIT FOR THE PARTICULAR VEHICLE.
3. CONNECTIONS OF CX-4723/VRC TO C-2298/VRC CAN BE MADE TO EITHER RECEPTACLE OF THE C-2298/VRC.
4. CABLE FROM COMMANDER'S CONTROL BOX MUST BE CONNECTED TO J504. CABLES FROM OTHER CREWMEMBER BOXES CAN BE CONNECTED TO J505, J506, AND J507 AT RANDOM.
5. NOT PROVIDED IN SOME INSTALLATIONS.

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Figure 2-6. Typical cabling of AN/VIC-1(V) and Radio Set AN/VRC-49.

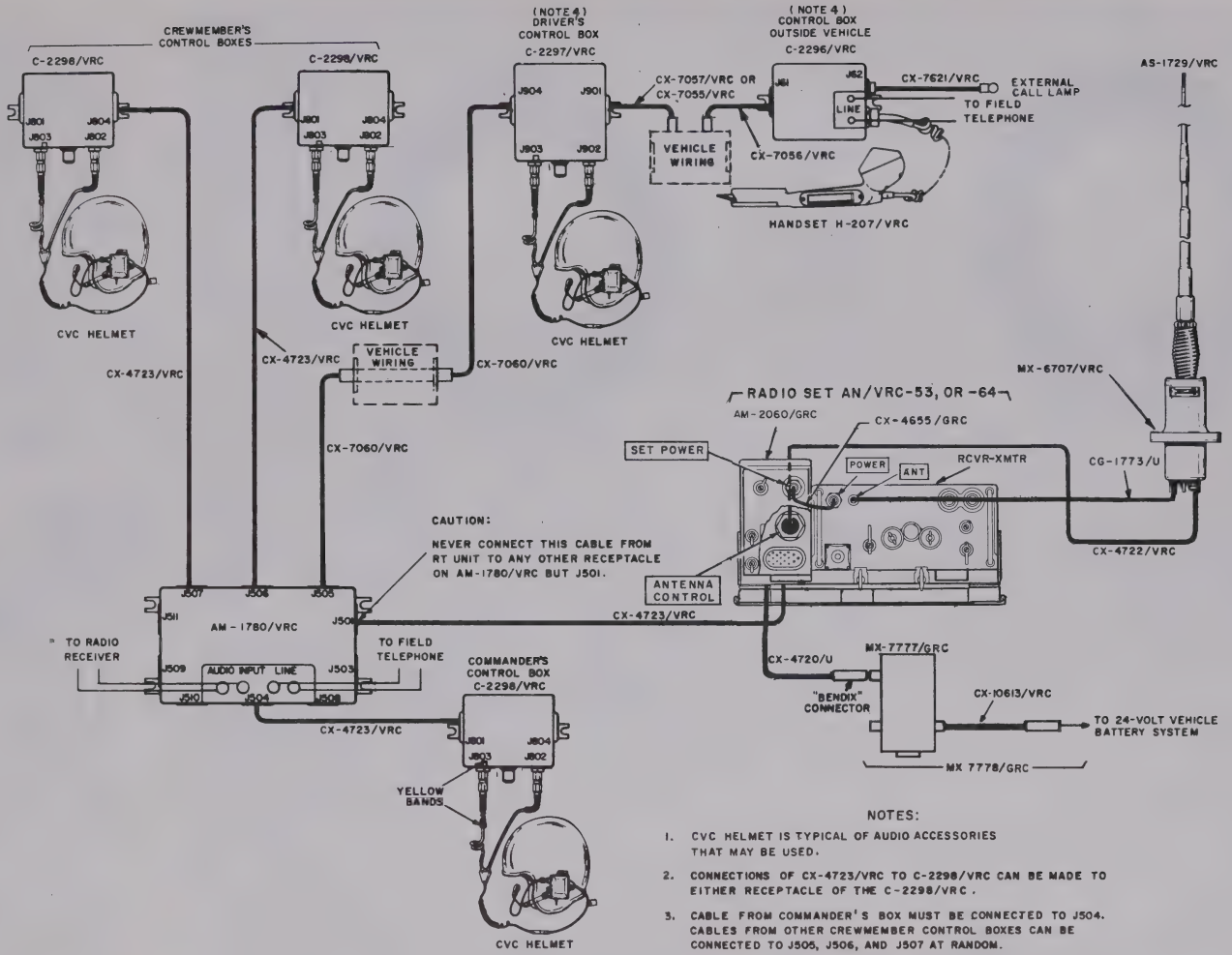

Figure 2–7. Typical cabling of AN/VIC–1(V) and Radio Set AN/VRC–53 or AN/VRC–64.

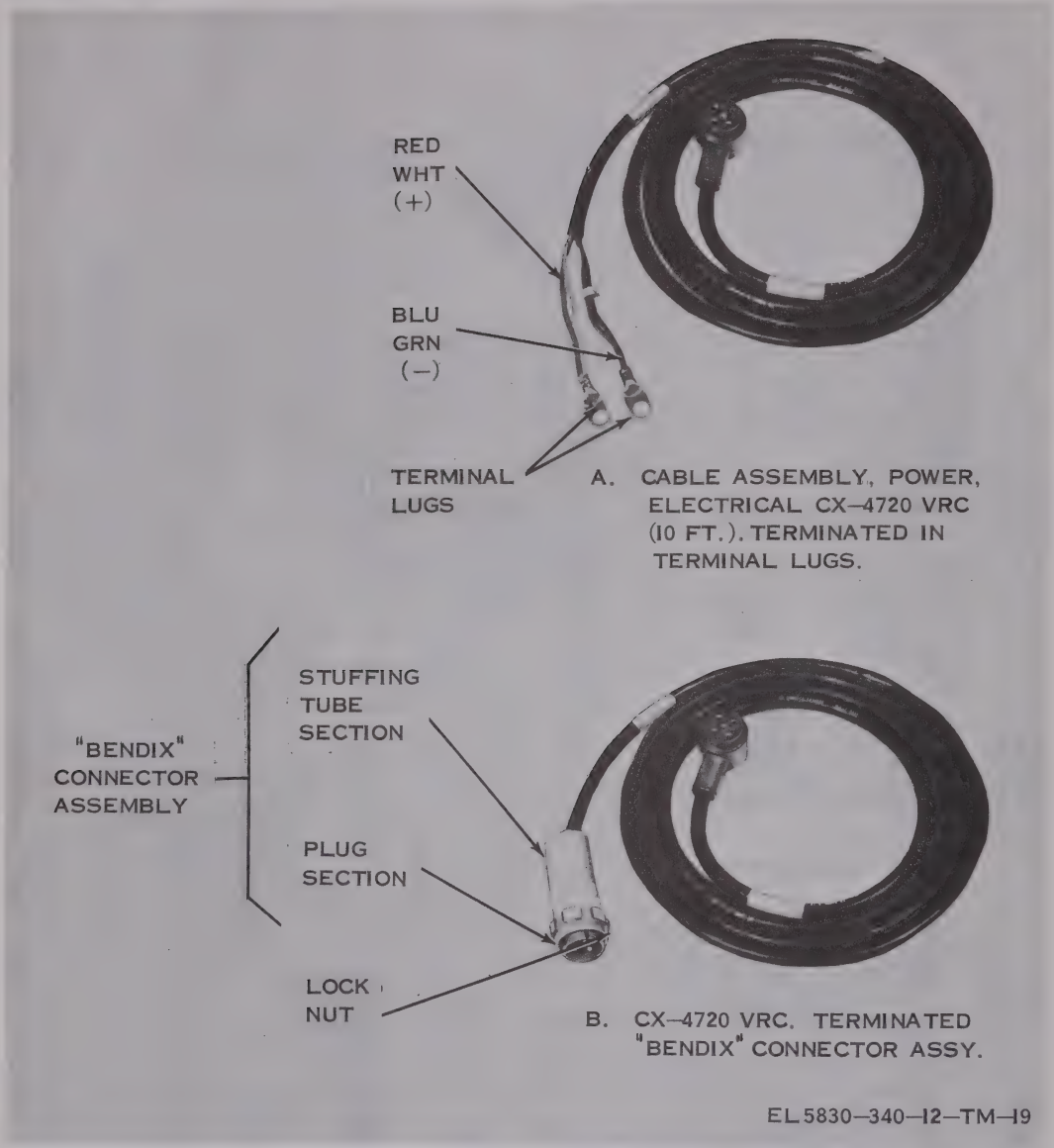

Figure 2-8. Cable Assembly, Power, Electrical CX-4720/VRC, terminated in terminal lugs and Bendix connector assembly.

terminal lugs ((1) below) or a Bendix connector ((2) below) is attached to the CX-4720/VRC.

(1) *Terminal lugs.* In installations in which the power cable is connected directly to the vehicle battery, terminal lugs are soldered to the cable conductors. The lugs are issued with the CX-4720/VRC and the MT-1029/VRC.

CAUTION

In order to identify the CX-4720/VRC wire conductors, attach a label permanently to each pair of wires connected to the battery terminals (fig. 2-10). The following labels may be used: Label, Battery Cable Lead (FSN 7960-477-

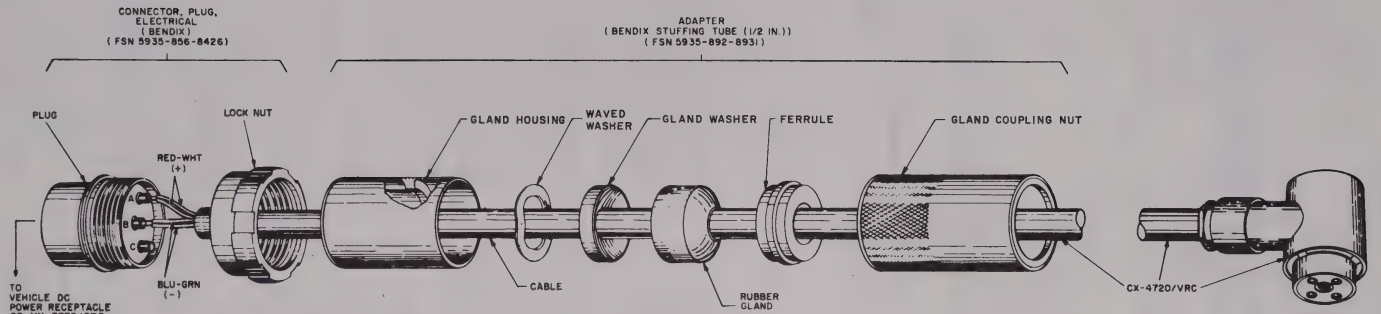

Figure 2-9. Bendix connector and CX-4720/VRC, assembly instructions.

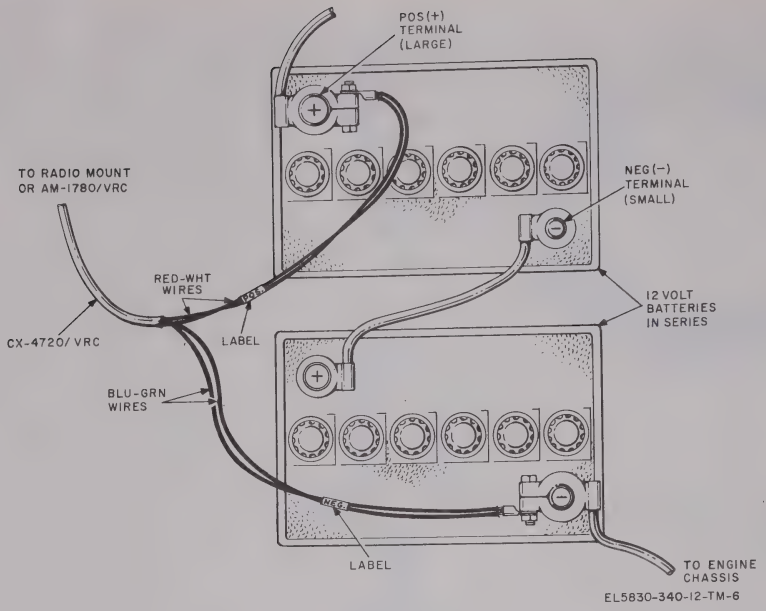

Figure 2–10. Connecting CX–4720/VRC to vehicle battery.

3714) for the red-white (positive) pair, and Label, Battery Cable Lead (FSN 7960–477–3715) for the blue-green (negative) pair.

(2) *Bendix connector.* In vehicles in which dc power is available from a three-pin receptacle, or from Suppressor, Electrical Transient MX–7778(*)/GRC, the CX–4720/VRC is attached to the Bendix connector. The assembly of the connector and the cable connections are explained in figure 2–9.

b. Installing and Removing CX–4720/VRC.

WARNING

Before installing or removing the CX–4720/VRC, turn off the vehicle engine and the AM–1780/VRC; also turn off the radio equipment if it is provided.

(1) *Installation.*

(*a*) When the AN/VIC–1(V) is used alone (fig. 2–4), attach the CX–4720/VRC to J508 on the AM–1780/VRC.

(*b*) When the AN/VIC–1(V) is used with the radio system (fig. 2–5 through 2–7), the CX–4720/VRC is connected to J21 of the MT–1029/VRC. The dc power is applied through the MT–1029/VRC receptacle J22 and the CX–4723/VRC to J501 on the AM–1780/VRC for use both by the AN/VIC–1(V) in the radio-intercom system and the radio system equipment. To install the CX–4720/VRC on the MT–1029/VRC, use the procedures in *1* through *5* below.

1. Separate the top tray of the MT–1029/VRC from its base assembly and connect the CX–4720/VRC to the left receptacle J21 (fig. 2–5). If applicable, connect the CX–4723/VRC to J22 and CX–4721/VRC to J23. Route each cable between the top tray and the base assembly in such a way that it follows the route of the cable to the next equipment.

2. Reinstall the top tray on the base assembly.

3. Route the cable to the equipment; use the prescribed route, insulators, and cable clamps that are provided.

4. When the cable is provided with terminal lugs (A, fig. 2–8), attach the cable lugs to the battery terminals as shown in figure 2–10.

5. When the cable is provided with the Bendix connector (B, fig. 2–8), connect the plug section to the power outlet in the vehicle or the MX–7778(*)/GRC, and tighten the locknut.

(2) *Removal.*

(*a*) When the AN/VIC–1(V) is used alone, disconnect the CX–4720/VRC from receptacle J508 on the AM–1780/VRC (fig. 2–4).

(*b*) When the AN/VIC–1(V) is used with the radio system, use the procedures in *1* or *2* below.

1. Separate the top tray of the MT–1029/VRC from its base assembly and disconnect the CX–4720/VRC from the receptacle. If required, disconnect other cables from the radio mount receptacles. Replace the top tray on the base assembly.

2. Disconnect the other end of the CX–4720/VRC from the battery terminals (fig. 2–10); be sure to tighten the nuts on the battery cable clamps after removal of the CX–4720/VRC. If the cable is connected to the vehicle power outlet or the MX–7778(*)/GRC, loosen the locknut of the Bendix connector and remove the connector from the outlet.

CHAPTER 3

OPERATING INSTRUCTIONS

Section I. CONTROLS, INDICATORS, AND RECEPTACLES

3-1. Amplifier, Audio Frequency AM-1780/VRC, Controls, Indicator, and Receptacles

(fig. 3-1)

Control, indicator, and receptacle	*Function*
MAIN PWR switch.	Controls power to radio and AM-1780 VRC.
	Position — *Function*
	OFF — Turns dc power off.
	INT ONLY — Turns on dc power to PWR CKT BKR.
	NORM — When power control link in MT-1029/VRC (para 2-3c) is set for remote control by AM-1780/VRC, dc power is applied to receiver-transmitter through J501. When receiver-transmitter is turned on, dc power is applied to PWR CKT BKR and also back to the radio. However, when the link in the MT-1029/VRC is not set for remote control by the AM-1780/VRC, dc power at J501 or J508 is applied to POWER CKT BKR.
INT ACCENT switch.	Controls the relative loudness of radio signals.
	Position — *Function*
	OFF — Radio and intercom signals have same loudness.
	ON — Radio signal level is reduced while intercom signal level is unchanged (intercom accentuated).
INSTALLATION switch.	Set according to the use of the AM-1780/VRC and the control boxes.
	Position — *Function*
	RETRANS — Disconnects all keying circuits between radios and control boxes.
	OTHER — Provides proper termination for radio keying and radio audio output. Used when AM-1780/VRC is connected to radios.
	INT ONLY — Provides path for dc power from J508. Used when AM-1780/VRC is not connected to radios (fig. 2-4).
RAD TRANS switch.	Determines which crewmember control boxes can control keying of receiver-transmitters; radio reception and intercom functions are unaffected.
	Position — *Function*
	CRD+CREW — All crewmembers can key receiver-transmitters.
	CDR ONLY — Only crew commander can key receiver-transmitters.
	LISTENING SILENCE — Neither crew commander nor crewmembers can key receiver-transmitters.
POWER CKT BKR.	Controls application of dc power to AM-1780/VRC circuits and control boxes; it also provides overload protection.
POWER indicator.	Indicates that power is applied when POWER CKT BKR switch is set to ON. When lens cap is rotated one-quarter counterclockwise, the light does not shine through the lens (for blackout conditions).
AUDIO INPUT binding posts.	Connection for audio output from auxiliary radio receiver.
LINE binding posts.	Connection for field wire from remotely located telephone or switchboard for communication on intercom circuit.
Receptacle J501	Connection for cable from receiver-transmitter for passage of main dc power and audio and control circuits between the radio and crewmember control boxes and receptacle J511.
Receptacle J503	Connection for cable from a second

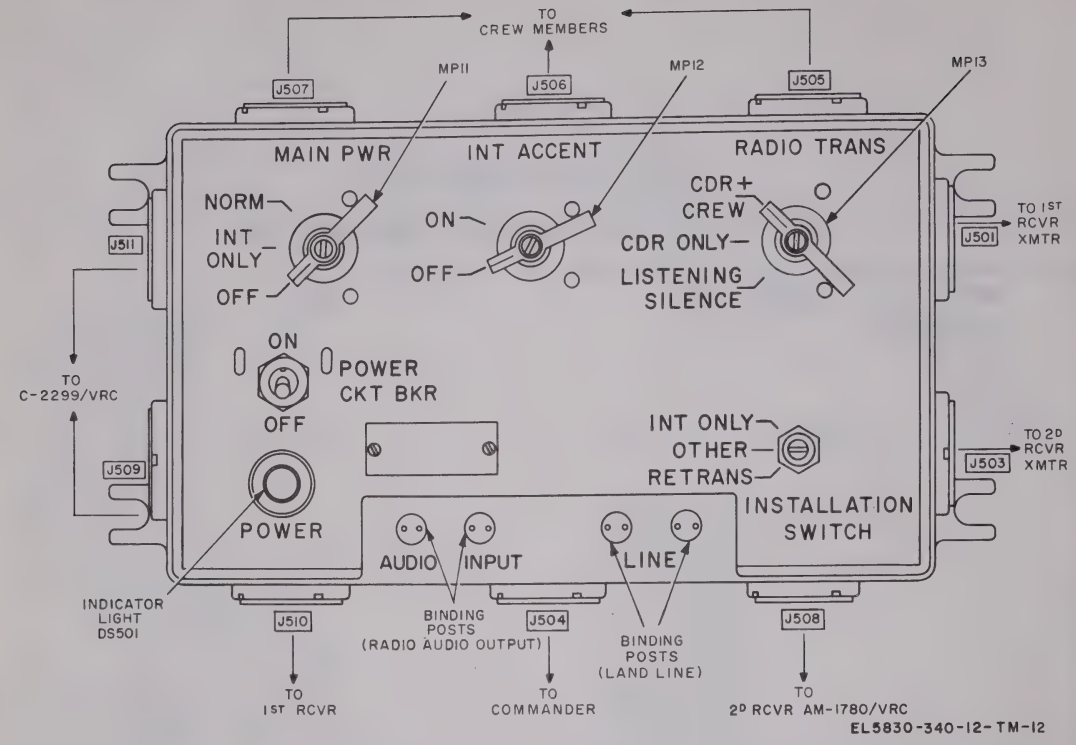

Figure 3–1. AM–1780/VRC, controls, indicator, and receptacles.

Control, indicator, and receptacle	*Function*
	receiver-transmitter for passage of dc power and audio and control circuits between the radio and crewmember control boxes and also receptacle J509.
Receptacle J508	Connection for cable from a second R–442(*)/VRC for passage of audio output from the receiver to crewmember control boxes. It also provides connection for a power cable from a dc power source when AM–1780/VRC is not connected to radios (fig. 2–4); INSTALLATION switch must then be set to INT ONLY.
Receptacle J510	Connection for cable from R–442(*)/VRC for passage of audio signals from the receiver to crewmember control boxes.
Receptacle J509	Connection for cable from receptacle J702 of C–2299/VRC for passage of audio and control circuits between C–2299/VRC and receiver-transmitter connected to J503.
Receptacle J511	Connection for cable from receptacle J701 of C–2299/VRC for passage of audio and control circuits between C–2299/VRC and receiver-transmitter connected to J501.
Receptacle J504	Connection for cable from commander's control box for passage of dc power and audio and control circuits between commander's control box and other crewmember control boxes, and all radios.
Receptacles J505, J506, and J507.	Connection for cables from crewmember control boxes for passage of dc power and audio and control circuits between each crewmember control box, the crew commander's control box, and all radios.

3–2. Control, Intercommunication Set C–2296/VRC, Controls, Receptacles, and Handset H–207/VRC (fig. 3–2)

Control, indicator, and receptacle	*Function*
RAD TRANS-INT	Selects operation that can be performed by H–207/VRC.

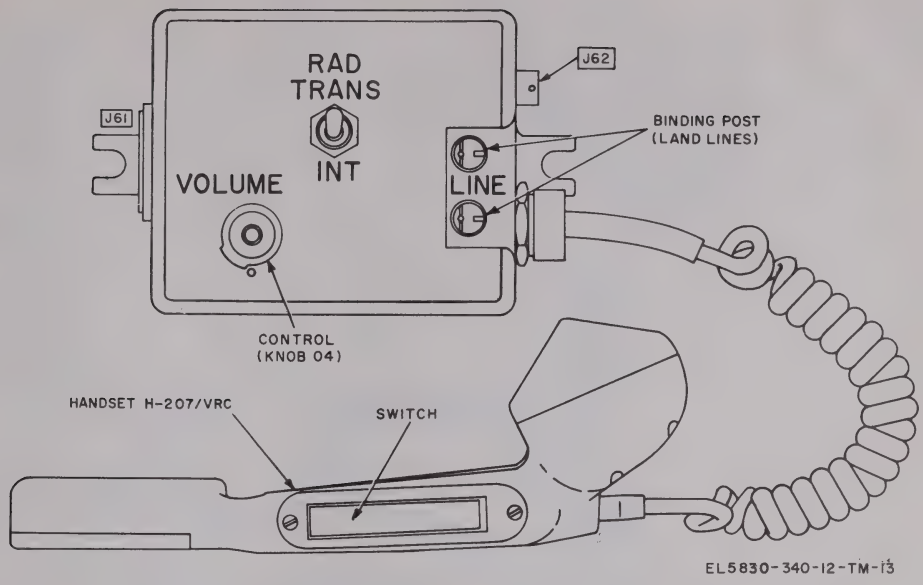

Figure 3-2. C-2296/VRC, controls, receptacles, and H-207/VRC.

Control, indicator, and receptacle	*Function*	
	Position	*Function*
switch. (SIG-EXT-OFF switch of C-2297/VRC must be set to EXT position before functions of C-2296/VRC can be accomplished.)	RAD TRANS (spring loaded)	Provides communication on radio(s) selected by MONITOR switch of C-2297/VRC (para 3-3).
	INT	Provides communication on intercom circuits.
VOLUME control.		Controls level of radio and intercom signals applied to H-207/VRC.
H-207/VRC		Provides two-way communication on circuit selected by RAD TRANS-INT switch. Push-to-talk switch is depressed to transmit and released to receive. Also, when the switch is depressed and the C-2297/VRC SIG-EXT-OFF switch is in OFF position, it causes the C-2297/VRC EXT lamp to light attracting the attention of the C-2297/VRC user.
LINE binding posts.		Connection for field wire from remotely located telephone or switchboard to provide communication on the intercom circuits.
Receptacle J61		Connection for cable from vehicle wiring connected to C-2297/VRC for passage of dc power and audio and control circuits.
Receptacle J62		Connection for cable to external call indicator which lights when SIG switch of C-2297/VRC is operated to SIG position.

3-3. Controls, Intercommunication Set C-2297/VRC and C-2298/VRC, Controls, Indicator, and Receptacles

(fig. 3-3 and 3-4)

Parts and functions given below apply to both control boxes unless otherwise indicated.

a. General. For the purpose of identifying the functions of the MONITOR switch of the C-2297/VRC and C-2298/VRC, the following terms are established.

(1) "A" radio refers to the receiver-transmitter connected to J501 of the AM-1780/VRC (fig. 2-5, 2-6, and 2-7).

(2) "B" radio refers to the receiver-transmitter connected to J503 of the AM-1780/VRC (fig. 2-6).

(3) Receiver "B" refers to the R-442(*)/VRC connected to J510 of the AM-1780/VRC (fig. 2-5).

(4) Receiver "C" refers to the R-442(*)/VRC connected to J508 of the AM-1780/VRC.

b. Parts Functioning.

Control, indicator, and receptacle	*Function*
MONITOR switch.	*a.* In C-2297/VRC and C-2298/VRC, it selects the radios and intercom operation to be controlled by audio accessories connected to audio accessory receptacles. *b.* In C-2297/VRC, the switch functions are also available to the C-2296/VRC (para 3-2) when the SIG-EXT-OFF switch is set to EXT position.

Position	*Function*
ALL	*a.* Received audio signals of "A" radio and receivers "B" and "C" can be heard. *b.* "A" radio can be used for transmission, provided no other crewmember keys his audio accessory on intercom. *c.* Talking and listening can be accomplished on intercom.
A	*a.* Received audio signals of "A" radio can be heard. *b.* "A" radio can be used for transmission, provided no other crewmember keys his audio accessory on intercom. *c.* Talking and listening on intercom can be accomplished.
INT ONLY	Talking and listening only on intercom can be accomplished from audio accessories.
B	*a.* Received audio signals of receiver "B" can be heard. *b.* "A" radio can be used for transmission, provided no other crewmember keys his audio accessory on intercom. (Usually "A" radio is tuned to receiver "B" for the operation.) *c.* Talking and listening on intercom can be accomplished.
C	*a.* Received audio signals of receiver "C" or "B" radio can be heard. *b.* "B" radio can be used for transmission, provided no other crewmember keys his audio accessory on intercom. *c.* C-2297/VRC: intercom cannot be accomplished. *d.* C-2298/VRC: intercom can be accomplished by crew commander (connected to J504 of AM-1780/VRC).

Control, indicator, and receptacle	*Function*
VOLUME control.	Controls level of radio and intercom signals applied to audio accessory receptacles.
Receptacles J801 and J804 of C-2298/VRC.	Connected in parallel, the receptacles provide connection for cables to AM-1780/VRC for passage of dc power and audio and control signals for radio and intercom operation.
Receptacles J901 and J904 of C-2297/VRC.	J901: Provides connection through vehicle wiring and cable to C-2296/VRC for passage of dc power and audio and control signals for radio and intercom operation by C-2296/VRC. J904: Provides connection through cable (and in some vehicular installations, also through vehicle wiring) to AM-1780/VRC for passage of dc power and audio and control signals for C-2297/VRC and C-2296/VRC.
Audio accessory receptacles: J803 and J802 of C-2298/VRC; J903 and J902 of C-2297/VRC.	J803 and J903 (yellow band) provide connection for audio accessory to key, talk and listen on intercom circuit. J802 and J902 provide connection for audio accessory to key, talk, and listen on radio selected by MONITOR switch.
Indicator light (C-2297/VRC only).	Lights when SIG-EXT-OFF switch is set to EXT and SIG positions. When switch is set to OFF, the light will light each time the H-207/VRC push-to-talk switch of C-2296/VRC is pressed.

Position	*Function*
SIG-EXT-OFF switch (C-2297/VRC only).	
SIG	Nonlocking position; causes call indicator light connected to C-2296/VRC (fig. 2-5) and C-2297/VRC indicator light to light.

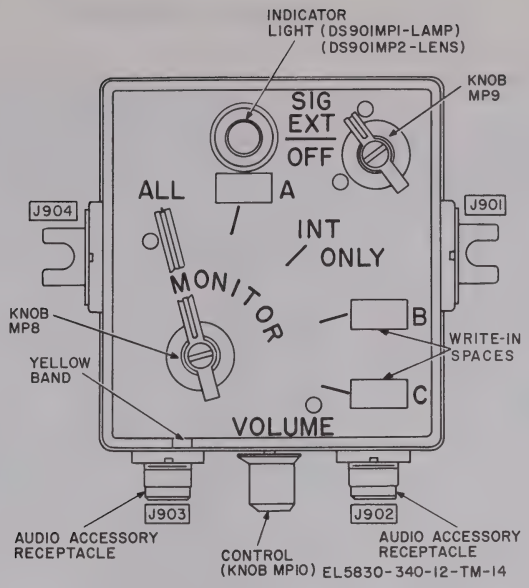

Figure 3-3. C-2297/VRC, controls indicator, and receptacles.

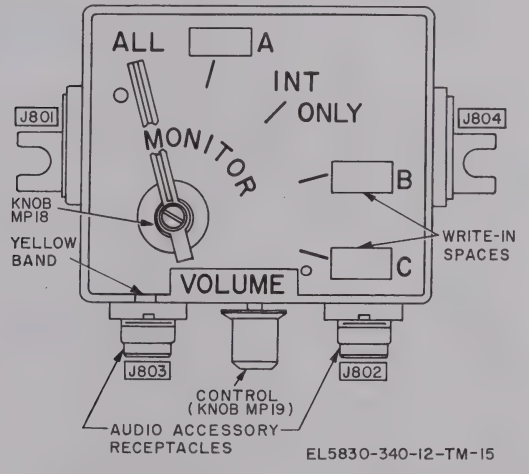

Figure 3-4. C-2298/VRC, controls and receptacles.

Control, indicator, and receptacle	*Position*	*Function*
	EXT	Connects radio and intercom functions of MONITOR switch to C-2296/VRC and causes indicator light to light.
	OFF	Disconnects C-2296/VRC from radio and intercom systems. Enables indicator to light when H-207/VRC switch is pressed.

Section II. OPERATING PROCEDURES

3-4. Connections and Use of Audio Accessories

a. General. Typical audio accessories used with the AN/VIC-1(V) and associated radios include a microphone (such as Microphone, Dynamic M-80/U; fig. 3-5), handsets (such as Handset H-189/GR or H-250/U), headsets (such as Headsets H-140A/U and H-250/U), headset-microphone (such as Headset-Microphone H-161/U), CVC helmet (fig. 3-7) in which an audio accessory similar to the H-161/U is installed, and a loudspeaker (such as Loudspeaker LS-454/U), with which Cable Assembly, Special Purpose, Electrical CX-7867/VRC of various lengths may be used as an extension cord (fig. 3-6). In some AN/VIC-1(V) installation, Cord Assembly, Electrical, Branched CX-8650(*)/GR (fig. 3-5 and 3-7) may be replaced by a longer retractile cord assembly such as Cord Assembly, Electrical, Branched CX-10766/GR (25-foot extension) (FSN 5995-248-4966) or CX-10767/GR (35-foot extension) (FSN 5995-434-5755). The branched cable assembly is provided in some vehicular installations (SB 11-131).

b. Operating Terms. The following expressions which are used throughout the operating procedures are defined as follows:

(1) The expression "set the audio accessory switch to RADIO" or "key the radio" means to operate the nonlocking push-to-talk switch of the microphone or handset, or to operate the CVC helmet or headset-microphone switch to the nonlocking RADIO position. While the switch is operated, the user talks with his lips close to the microphone; sidetone of the transmission is usually available. Received radio signals cannot be heard until the switch is released.

(2) The expression "set the audio accessory switch to off" means to release the push-to-talk switch of the microphone or handset, or to operate the CVC helmet or headset-microphone switch to center (locking) position to hear received radio and intercom signals; or to await the reception of radio and intercom signals (standby operation) which can be heard in the center position without any action on the part of the user.

(3) The expression "set the audio accessory switch to INTERCOM" or "key the intercom" means to operate the microphone or handset push-to-talk switch, or to operate the CVC helmet or headset-microphone switch to the locking INTERCOM position. While in this position, the user talks with his lips close to the microphone; the received signals can be heard; sidetone of the transmission usually is available.

c. Audio Accessory Connections (fig. 3-8).

(1) Insert the connector of the audio accessory into the audio accessory of the equipment with the flat surface in line with the receptacle key; push and twist the connector until it locks onto the receptacle.

(2) To facilitate connection and removal of the connector, put a light coating of insulating compound (para 5-3*a*(2)) on the O-ring of the connector or dampen the O-ring before inserting it on the equipment receptacle.

d. Using Microphones and Handsets (fig. 3-8). Typical handset is provided with a dynamic microphone, earphone, and push-to-talk switch. Microphone M-80/U (B, fig. 3-5) is provided with a microphone and push-to-talk switch. The M-80/U and microphones of the handsets have a noise-cancelling circuit, provided by a small, separate opening behind the microphone that effectively cancels or reduces outside noise during the time the user is talking on the microphone. Operation is accomplished by operating the push-to-talk switch and talking into the microphone with the lips close to the mouthpiece, and releasing the switch to hear the reply. To use the microphone or handset, use the following connections as applicable.

(1) To use the receiver-transmitter or R-442(*)/VRC in the radio system, connect the microphone or handset to the right receptacle of the control box.

(2) To use the intercom circuit, connect the microphone or handset to the left receptacle, identified with a yellow band.

e. Using Loudspeaker and Headsets. The received audio signals are controlled to the desired listening level by adjustment of the equipment VOLUME control.

(1) Attach the LS-454/U and headsets to the equipment receptacles as shown in C and E, figure 3-8.

(2) Do not connect the LS-454/U or headsets to a C-2299/VRC that is connected to the AM-1780/VRC (fig. 2-6); the received radio signals are not available at the C-2299/VRC connected to the AM-1780/VRC. This restriction does not apply when the C-2299/VRC is connected directly to the radios.

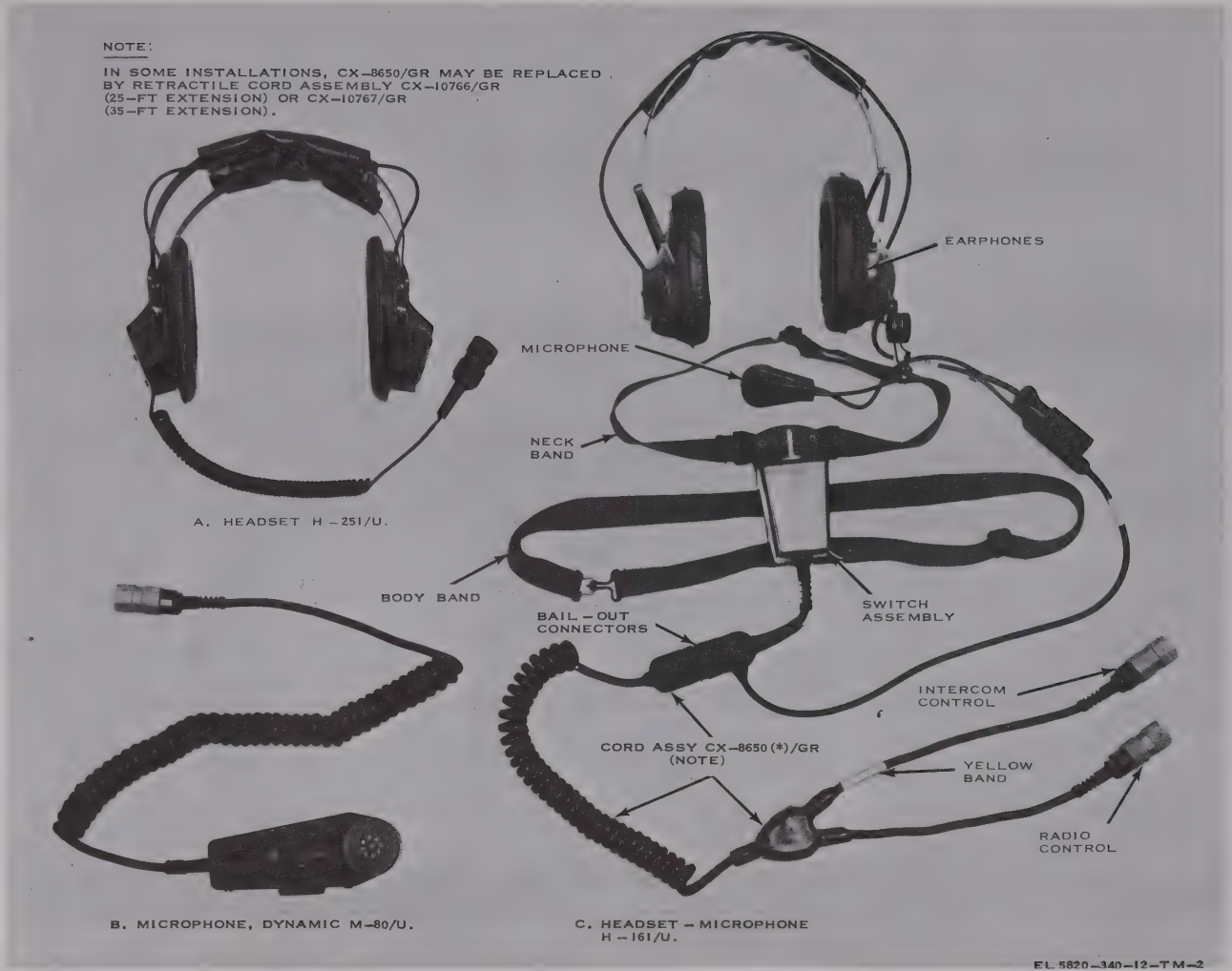

Figure 3-5. Typical microphone, headset, and headset-microphone used with AN/VIC-1(V) control boxes and radios.

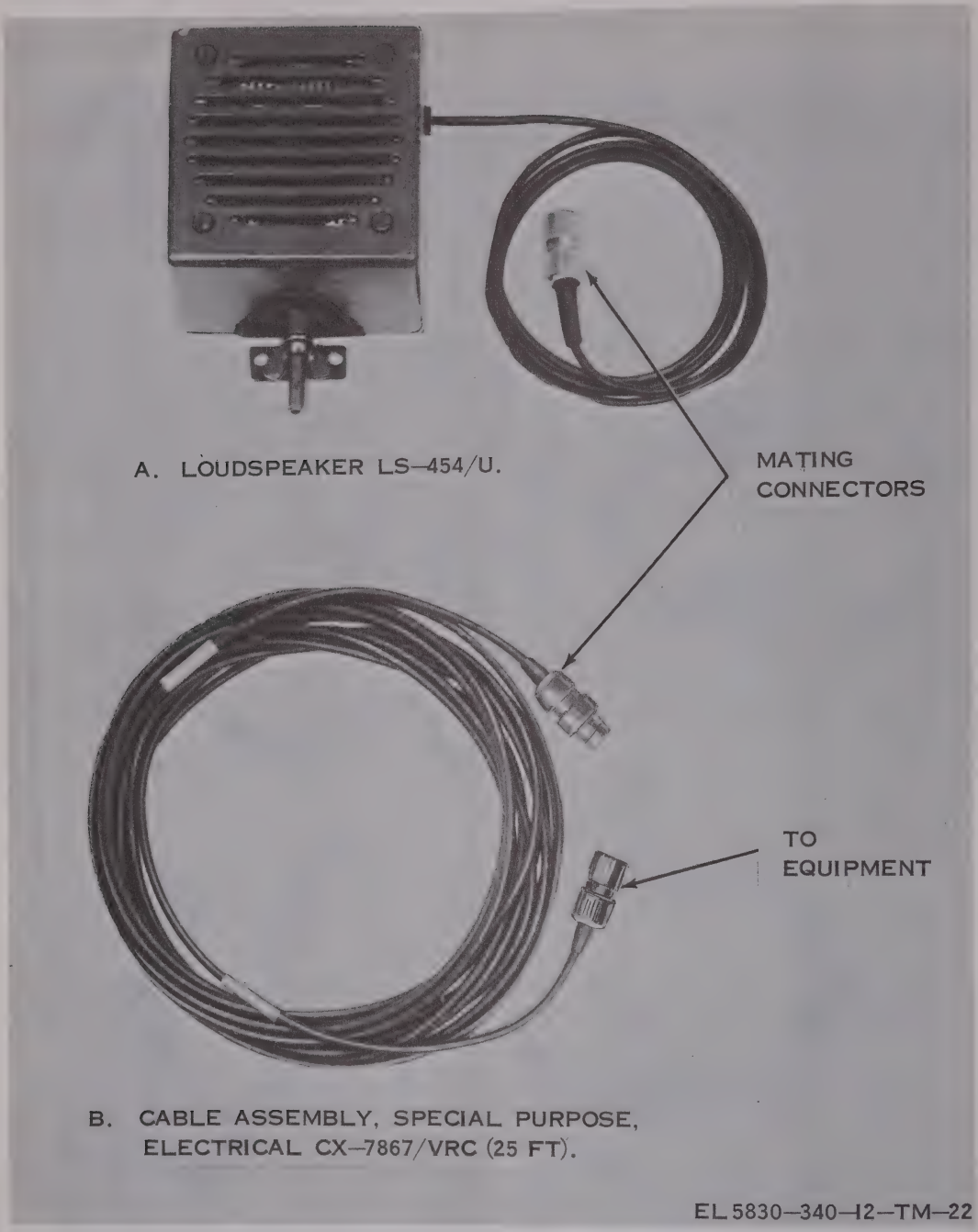

Figure 3-6. Loudspeaker LS-454/U and extension cable CX-7867/VRC.

Figure 3-7. CVC helmet with typical audio accessory installed.

f. Using CVC Helmet and Headset-Microphone.

(1) The switch on these audio accessories has three positions, as follows:

(*a*) The forward, nonlocking position (marked RAD on H-161/U) is identified as the "RADIO" position in these operating instructions. The position is used for radio transmission; the transmitter is keyed and sidetone of the transmission is heard.

(*b*) The rearward, locking position (marked I C S (intercom system) on the H-161/U) is identified as the "INTERCOM" position in these operating instructions. The position is used for intercom transmission; the intercom is keyed, sidetone of the transmission is heard, and intercom and radio signals can be heard.

(*c*) The locking midposition disconnects the keying and microphone functions of the RADIO and INTERCOM positions of the

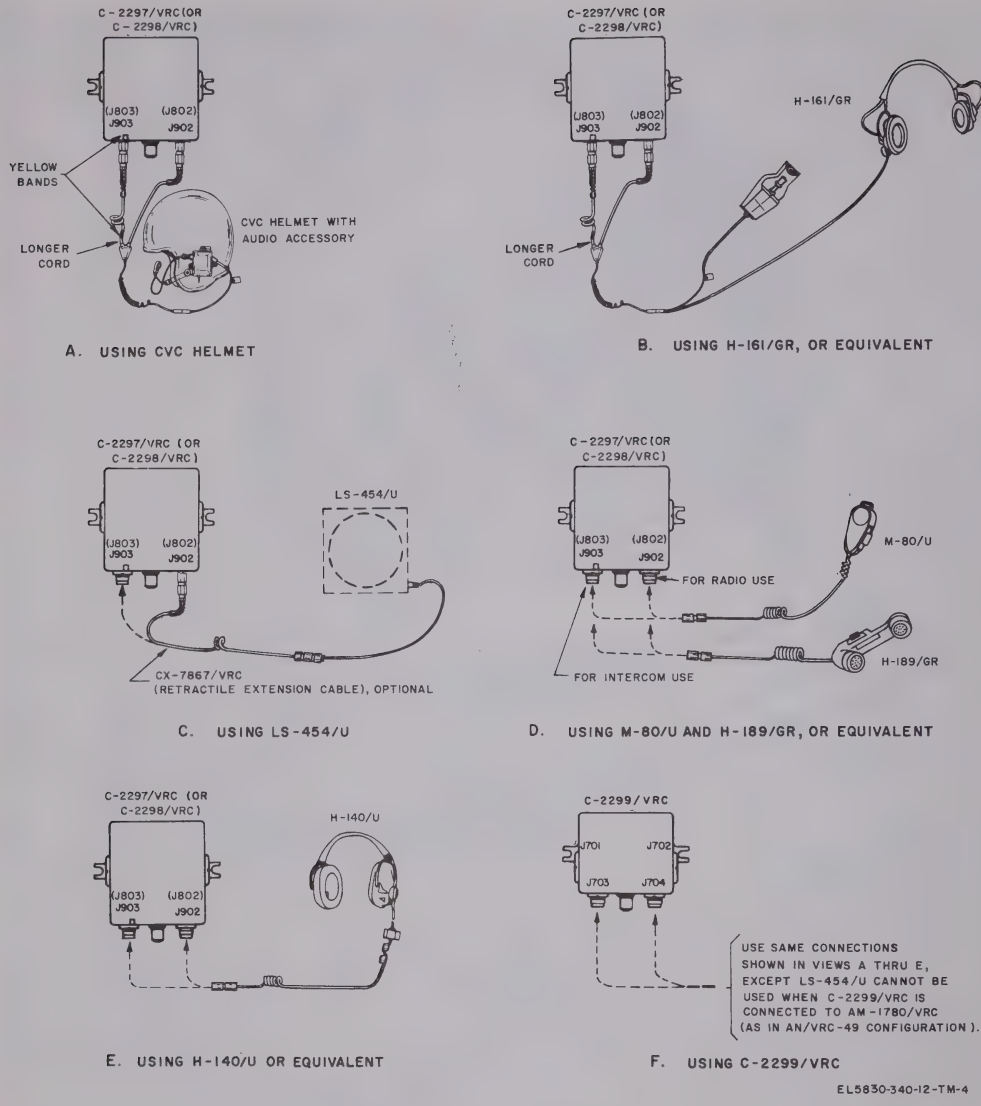

Figure 3-8. Typical connections of audio accessories to control boxes.

switch, and permits radio and intercom signals to be heard.

(2) Of the two audio receptacle connectors of the CVC helmet and headset-microphone, one is attached to a longer cord identified with a yellow band. This connector contains the keying control for the intercom circuit. The shorter cord connector contains the keying control for the radio circuit, and the microphone and earphone circuits for both radio and intercom operation.

(3) On the C-2297/VRC, C-2298/VRC, and C-2299/VRC, attach the audio accessory as shown in A and B, figure 3-8. Set the switch as required as explained in (1) above.

CAUTION

Observe the precaution on warning label DA Label 132: WARNING: DO

NOT START VEHICLE WHILE RADIO IS ON. The precaution also applies when the AN/VIC–1(V) is used in the vehicle. The label, attached in an "attention-arresting" location near the vehicle engine ignition or starting switch, is issued in accordance with SB 11–624 (Warning Notice for Vehicles in Which Radios are Mounted). Spraying or painting the label with clear lacquer or varnish will preserve the label.

3–5. Operation of AN/VIC–1(V) for Radio and Intercom Functions

a. AN/VIC–1(V) Used With Radio Systems. When radios are used with the AN/VIC–1(V) (fig. 2–5 through 2–7), detailed instructions for radio and intercom operation are provided in the following publications covering the indicated radio sets:

(1) When the AN/VIC–1(V) is used with Radio Sets AN/VRC–12 and AN/VRC–43 through AN/VRC–49, refer to TM 11–5820–401–12.

(2) When the AN/VIC–1(V) is used with Radio Sets AN/VRC–53, AN/VRC–64, AN/GRC–125, and AN/GRC–160, refer to TM 11–5820–498–12.

(3) When the AN/VIC–1(V) is used with the AN/VSC–3, refer to TM 11–5815–332–15.

b. AN/VIC–1(V) Used Alone (Without Radio System) (fig. 2–4).

(1) *General.* When one crewmember is keyed for talking on the intercom, all crewmembers hear the transmission, and sidetone is heard by the speaker. When the MONITOR switch of any control box is set to INT ONLY, the intercom circuit will be keyed for communication with other crewmember control boxes. When the user is not talking, vehicle noises are transmitted through the system to other crewmembers. To prevent this, operate the audio accessory switch to INTERCOM only when desiring to communicate with the crewmembers. The noise-cancelling circuit in the audio accessory microphone effectively cancels or reduces the outside noise provided the user speaks *with his lips close to the microphone.*

(2) *Starting procedure.* Turn on AM–1780/VRC (fig. 3–1) as follows:

(*a*) Set INSTALLATION switch to INT ONLY. (The power cable must be connected to J508.)

(*b*) Set MAIN PWR switch to INT ONLY.

(*c*) Set POWER CKT BKR switch to ON. The POWER indicator lamp should light. For blackout conditions, rotate the lamp cover to the right. To see the light, rotate the lamp cover one-quarter turn to the left.

(*d*) If the POWER CKT BKR switch springs back to OFF, an overload is present in the system. To reset the switch when it trips, reset it to ON. If the circuit breaker trips again, do not reset it; troubleshooting is required (para 5–6*b*).

(*e*) The INT ACCENT and RAD TRANS switches may be set to any position; they do not function in intercom operation.

(3) *Operating C–2298/VRC and C–2297/VRC* (fig. 3–3 and 3–4). The following operational procedures apply to each C–2298/VRC and C–2297/VRC in the system.

(*a*) Set the MONITOR switch to INT ONLY.

(*b*) To standby or to listen to calls from other crewmembers, set the audio accessory switch to OFF.

(*c*) To talk to other crewmembers, set the audio accessory switch to INTERCOM, talk into microphone; sidetone should be heard.

(4) *Operating C–2296/VRC* (fig. 3–2). When the C–2296/VRC is provided, a C–2297/VRC is required. An external call light is provided on the box in which the C–2296/VRC is mounted on the outside of the vehicle for the purpose of attracting the attention of personnel outside the vehicle.

(*a*) Use the following procedures to attract the attention of C–2297/VRC and C–2296/VRC users:

1. To attract the attention of the C–2296/VRC user, operate the C–2297/VRC SIG-EXT-OFF switch a number of times. The external call light at the C–2296/VRC should light each time the switch is operated.

2. To attract the attention of the C–2297/VRC user, operate the push-to-talk switch on the H–207/VRC. The C–2297/VRC indicator light should light.

(*b*) To establish communication between C–2297/VRC and C–2296/VRC users, proceed as follows:

1. Set C–2297/VRC SIG-EXT-OFF switch to EXT and the MONITOR switch to INT ONLY.

2. Set the audio accessory switch to INT ONLY and talk to the H–207/VRC user.

3. At the C–2296/VRC, press the push-to-talk switch of the H–207/VRC and talk on the intercom to the crewmembers.

4. Under the conditions in *1* and *2* above, other crewmembers can talk to the intercom with the C–2296/VRC user.

(*c*) When intercom operation from the C–2296/VRC is no longer required, set the C–2297/VRC SIG-EXT-OFF switch to OFF. The C–2297/VRC indicator lamp should go out indicating the C–2296/VRC is disconnected.

(*d*) When the LINE binding posts of the C–2296/VRC are connected to a field telephone or the AN–1780/VRC or C–2296/VRC of another vehicle, refer to *c* below for operating procedures.

c. Field Telephone and Intervehicle Operation. To communicate with a user of field telephone connected to the AM–1780/VRC or C–2296/VRC (para 2–5*c*(1)), or to communicate with crewmembers of another vehicle when the AM–1780/VRC or C–2296/VRC of both vehicles are interconnected (para 2–5*c*(2)), use the following operating procedures. Radio communication cannot be established with this arrangement.

CAUTION

The ringing signal from a field telephone can damage the circuits in the AM–1780/VRC. Thus, the telephone user must be advised that he cannot use his telephone ringer to attract the attention of vehicle crewmembers. To attract attention, he should whistle or talk into the telephone.

(1) When the lines are connected to the C–2296/VRC, the C–2297/VRC SIG-EXT-OFF switch must be set to EXT.

(2) Set the MONITOR switch of the control boxes to ALL. Only the crew commander's C–2298/VRC MONITOR switch can be set to position C to communicate on this circuit.

(3) To talk to the other party, set the audio accessory switch to INTERCOM and talk; release the switch to hear the reply. The communication must be conducted on a push-to-talk, release-to-receive basis.

CAUTION

If any other crewmember in the vehicle is keyed on intercom, the reply cannot be heard.

d. Stopping Procedures.

(1) To turn off the equipment when any radio is associated with the AN/VIC–1(V) (fig. 2–5, 2–6, and 2–7), proceed as follows:

(*a*) On the AM–1780/VRC, set the MAIN PWR switch to OFF.

(*b*) On the radio(s), set the POWER switch to OFF.

(2) To turn off the AN/VIC–1(V) when no radio is associated with it (fig. 2–4), set the AM–1780/VRC MAIN PWR switch to OFF.

CHAPTER 4

OPERATOR MAINTENANCE INSTRUCTIONS

Section I. PREVENTIVE MAINTENANCE

4–1. Scope of Operator Maintenance

The following duties are normally performed by the operator and user of the AN/VIC–1(V).

a. Preventive maintenance (para 4–2; tables 4–1 and 4–2).

b. Troubleshooting (para 4–4 and 4–5).

c. Cleaning equipment (para 4–3).

4–2. Preventive Maintenance, General

To insure that equipment is always ready for operation, it must be inspected periodically and systematically so that defects may be discovered and corrected before they result in serious damage or equipment failure. The necessary preventive maintenance checks and services to be performed are listed in tables 4–1 (daily) and 4–2 (weekly). From the items listed, perform those that are provided in the vehicle being checked. Defects discovered during inspection will be noted for future correction to be made as soon as the inspection is completed. Stop operation immediately if a deficiency is noted during operation which could damage the equipment. Record all deficiencies together with the corrective action taken; use DA Form 2404 (Equipment Inspection and Maintenance Worksheet) (TM 38–750). Refer to paragraph 4–3 for cleaning instructions.

Table 4–1. Operator Preventive Maintenance Checks and Services—Daily Schedule

Item No.	Item to be inspected	Procedure	Reference
1	AUDIO ACCESSORIES	Check to see that: *a.* Cable insulation is not damaged. *b.* Moisture barrier is in place in the microphone and earphone, if applicable. *c.* Microphone boom assembly functions to hold microphone in desired position in front of the user's mouth. *d.* Both earphones have required accessories. *e.* When not in use, audio accessories are stowed so they will not be damaged by equipment or personnel. *f.* If used, loudspeaker (fig. 3–6) is securely installed in its position in vehicle. *g.* O-rings in cable connectors are in place and are not loose.	Fig. 3–5. Fig. 5–1.
2	RADIO OPERATION FROM CONTROL BOXES IN RADIO-INTERCOM SYSTEM.	Refer to operator's preventive maintenance checks and services in publication covering radio set.	For AN/VRC–12-series radios, refer to TM 11–5820–401–12. For Radio Sets AN/VRC–53, AN/VRC–64, AN/GRC–125, and AN/GRC–160, refer to TM 11–5820–498–12. For Radio Teletypewriter Set AN/VSC–3, refer to TM 11–5815–332–15.

Table 4-1. Operator Preventive Maintenance Checks and Services—Daily Schedule—Continued

Item No.	Item to be inspected	Procedure	Reference
3	INTERCOM FUNCTION OF CONTROL BOXES.	Check the following:	
		a. From each audio accessory at each control box, check for satisfactory intercom communication with other control boxes.	*a.* Para 3-5*b*.
		b. When it is known or anticipated that a telephone will be connected to the intercom system at the C-2296/VRC or AM-1780/VRC, perform a check of the intercom circuit from a test telephone connected to the C-2296/VRC and AM-1780/VRC.	*b.* Para 3-5*c*.

Table 4-2. Operator Preventive Maintenance Checks and Services—Weekly Schedule

Item No.	Item to be inspected	Procedure	Reference
1	AUDIO ACCESSORIES	Clean all parts of the audio accessories. Clean CVC helmet, inside and outside.	
2	BATTERY COMPARTMENT OF VEHICLE.	On vehicles in which power cable CX-4720/VRC is connected to vehicle battery (or other dc power source), check the following:	Fig. 2-10.
		a. Battery terminals are free of corrosion.	
		b. Power cable lugs are tightened securely by battery cable clamps.	
		c. Proper colored power cable wires are connected to positive and negative terminals of the battery or power source.	
		d. Power cable leads are labeled	*d.* Para 2-5*a*(1).
3	MX-7778(*)/GRC	Perform the following:	TM 11-5915-223-12 for MX-7778/GRC; TM 11-5915-224-14 for MX-7778A/GRC.
		a. Clean the case.	
		b. Check to see that the boot covering ON-OFF switch is intact.	
		c. Check to see that the ground strap is connected between the top and bottom of one of the mounting bolts.	
		d. Put receptacle cover on unused receptacle.	
4	AM-1780/VRC	Perform the following:	Fig. 1-1.
		a. Clean the case.	
		b. Check to see that dust covers are installed on unused cable receptacles.	*b.* Para 2-4*c*.
5	C-2298/VRC	Perform the following:	Fig. 1-1, para 2-5*b*.
		a. Clean the case.	
		b. Check to see that locknuts of audio accessory receptacles are tight.	*b.* Fig. 2-3.
		c. Check to see that a dust cover is installed on unused cable receptacle.	*c.* Para 2-4*c*.

Table 4-2. Operator Preventive Maintenance Checks and Services—Weekly Schedule—Continued

Item No.	Item to be inspected	Procedure	Reference
6	C-2297/VRC	Perform the following: *a.* Clean the case. *b.* Check to see that locknuts of audio accessory receptacles are tight. *c.* Check to see that connectors of cables to vehicle outlets are tight.	Fig. 1-1, para 2-5*b*. *b.* Fig. 2-3.
7	C-2296/VRC	Perform the following: *a.* Clean the box in which the C-2296/VRC is mounted, and also C-2296/VRC case. Clean the H-207/VRC and its retractile cable. *b.* Check to see that the indicator lamp socket is secured in the box in which the C-2296/VRC is mounted. *c.* Check to see that the H-207/VRC is secured to the clips that hold it to the cover of the box.	Fig. 1-1, para 2-5*b*.
8	RADIO EQUIPMENT	Refer to operator's preventive maintenance checks and services in publication covering radio set.	For AN/VRC-12-series radios, refer to TM 11-5820-401-12. For Radio sets AN/VRC-53, AN/VRC-64, AN/GRC-125, and AN/GRC-160, refer to TM 11-5820-498-12. For Radio Teletypewriter Set AN/VSC-3, refer to TM 11-5815-332-15.

4-3. Cleaning Equipment

The exterior surfaces of the equipment should be clean; that is, there should be no dust, dirt, grease, oil, or fungus on the surfaces.

a. Remove dust and loose dirt with a clean cloth.

WARNING

The fumes of Cleaning Compound, Trichloroethane (Federal Stock Number 6810-292-9625; 1 qt) are toxic. Provide enough ventilation whenever used. Do not use near an open flame. Trichloroethane is not flammable, but exposure to the open flame converts the fumes to a highly toxic and dangerous gas.

b. Remove grease, oil, fumes, and ground-in dirt from equipment with a clean cloth dampened (not wet) with trichloroethane.

c. If the equipment is washed down using a water hose, do not direct the water directly at the front panels and cable connectors. Wipe the equipment dry after using the water hose.

Section II. OPERATOR TROUBLESHOOTING PROCEDURES

4-4. Troubleshooting by Visual Inspection

a. Power Failure. If, during operation of the radio or radio-intercom equipment, the system seems to lose power, make the following checks:

(1) If the vehicle has a master switch, check to see that it is turned on.

(2) Check to see that the radio is pushed back fully on its mount and that the mounting clamps are tightened fully.

(3) When the CX-4720/VRC power cable is connected to the MX-7778( )/GRC, check to see that the MX-7778(*)/GRC ON-OFF switch is set to ON, and that the cables connected to the MX-7778(*)/GRC and the radio mount are fully tightened to their receptacles.

(4) Check to see that the POWER switch on the radio is turned on. Check to see that the AM–1780/VRC MAIN PWR switch is set to NORM. Also check to see that the AM–1780/VRC INSTALLATION switch is set to OTHER. When the AM–1780/VRC POWER CKT BKR is set to ON, the POWER indicator should light.

b. Radio Communication Failures. For radio equipment failures, refer to TM 11–5820–401–12 for AN/VRC–12 series radios; to TM 11–5820–498–12 for AN/VRC–53, AN/VRC–64, AN/GRC–125, and AN/GRC–160 radios; and to TM 11–5815–332–15 for the radio set in the AN/VSC–3.

c. Failures While Using Radio-Intercom System. When radio or intercom communication failures occur while using audio accessories connected to the control boxes of the radio-intercom system, make the following checks:

(1) Check to see that the audio accessory cable connectors are locked on the control box receptacles.

(2) Note that radio communication from all control boxes will be broken if another crewmember keys on the intercom circuit. However, radio communication from the crew commander's control box (always connected to J504 of the AM–1780/VRC) is not interrupted when another crewmember keys on the intercom.

(3) Check to see that the POWER indicator on the AM–1780/VRC is lighted. If not, set the POWER CKT BKR switch to ON.

(4) If the C–2297/VRC fails while the turret is being turned, the turret slip rings may be at fault.

(5) If the C–2296/VRC is inoperative, check the cabling between the C–2296/VRC and the C–2297/VRC for damage.

(6) For radio failures, see *b* above.

(7) Refer to paragraph 4–5 to troubleshoot the radio-intercom system.

4–5. Procedures for Operator to Troubleshoot Radio-Intercom System

a. General. The troubleshooting procedures in *b* below cover the AN/VIC–1(V), the audio accessories, and cabling in the radio-intercom system. Also included are procedures for troubleshooting the C–2299/VRC that may be connected to the AM–1780/VRC (items 6 and 7, *b* below). When the corrective measures indicated do not clear the trouble, higher maintenance level troubleshooting is required.

b. Troubleshooting Radio-Intercom System.

Item No.	*Symptom*	*Probable causes*	*Corrective measures*
1	Unable to communicate on intercom or radio.	*a.* Power is turned off	*a.* On AM–1780/VRC, the POWER indicator should be lighted. If not, check the following: (1) On the AM–1780/VRC, rotate POWER indicator lens to right; set POWER CKT BKR switch to ON, MAIN PWR switch to NORM, and INSTALLATION switch to OTHER. (2) If POWER indicator is still not lighted, set POWER switch on receiver-transmitter connected to J501 of AM–1780/VRC to LOW or HIGH. The dial lamp in receiver-transmitter should light, the transmitter should be able to be keyed, and sound should be heard from its receiver. These signs indicate power is available to operate the radio and radio-intercom systems. (3) If the receiver-transmitter does not exhibit above signs, refer to paragraph 4–4*b*.
		b. Loose cable connections	*b.* Tighten cable connections at J501 of AM–1780/VRC and at MT–1029/VRC.

Item No.	Symptom	Probable causes	Corrective measures
		c. Defective AM–1780/VRC	c. Higher maintenance level troubleshooting is required.
2	Unable to communicate on intercom or radio from one of the control boxes (other than C–2296/VRC).	a. Audio accessory defective or connected incorrectly.	a. Perform the following: (1) Substitute the original audio accessory with one known to be good. (2) Connect the original audio accessory to another control box and check it for operation. (3) Refer to paragraph 3–4 instructions on the use of of audio accessories.
		b. Loose cable connections	b. Tighten cable connections at the control box cable receptacle, the vehicle outlets, and the AM–1780/VRC.
		c. Defective control box or cable	c. Higher maintenance level troubleshooting is required.
3	Unable to communicate on any radio from any control box; intercom operation is satisfactory.	a. Some crewmember's audio accessory is keyed on intercom or is defective.	a. Perform the following: (1) Check other crewmembers' audio accessories to see that one is not set to INTERCOM. (2) Disconnect cable connectors of the audio accessory of each crewmember, in turn, from the control box.
		b. Audio accessory defective or connected incorrectly.	b. Perform corrective measures given in item 2*a* above.
		c. MONITOR switch is not set correctly.	c. Set MONITOR switch to ALL or A to communicate on one receiver-transmitter; to C to communicate on second receiver-transmitter; to B to hear signals from one R–442 (*)/VRC; and to C to hear signals from second R–442(*)/VRC.
		d. RAD TRANS switch on AM–1780/VRC is set to LISTENING SILENCE.	d. Set switch to CDR+CREW of CDR ONLY, if authorized, to enable crewmembers or crew commander, respectively, to use receiver-transmitter.
		e. Defective radio	e. Refer to paragraph 4–4*b*.
4	Unable to communicate from driver's C–2297/VRC or C–2298/VRC; other control boxes operate satisfactorily.	a. Loose cable connections	a. Perform the following: (1) Tighten cable connection at left receptacle of the control box and at vehicle receptacle. (2) Tighten cable connection at AM–1780/VRC and at vehicle receptacle.
		b. Defective vehicle wiring	b. Higher maintenance level troubleshooting required.
5	Unable to communicate from C–2296/VRC (C–2297/VRC is satisfactory).	a. Switches are not set properly on C–2297/VRC.	a. Set C–2297/VRC MONITOR switch to some position other than C, and set SIG-EXT-OFF switch to EXT; C–2297/VRC indicator lamp should light.
		b. Loose cable connections	b. Perform the following: (1) Tighten cable connector at right receptacle of C–2297/VRC and at vehicle receptacle. (2) Tighten cable connector at left receptacle of C–2296/VRC.
		c. Defective vehicle wiring	c. Higher maintenance level troubleshooting required.

Item No.	Symptom	Probable causes	Corrective measures
		d. Defective C–2296/VRC, H–207/VRC.	*d.* Higher maintenance level trouble-shooting required.
6	Receiver-transmitter cannot be keyed by audio accessory.	AM–1780/VRC is set up for retransmission operation.	If authorized, set AM–1780/VRC INSTALLATION switch from RETRANS to OTHER position.
7	Radio signals cannot be heard on audio accessory connected to C–2299/VRC.	Radio reception is not available at C–2296/VRC when it is connected to AM–1780/VRC.	Connect audio accessory to some control box to hear radio signals (MONITOR switch on position ALL).
8	Communication between individual receiver-transmitter and distant radios can be accomplished, but retransmission through relay site radios and C–2299/VRC cannot be accomplished.	*a.* Control switch on C–2299/VRC is not set correctly.	*a.* Set C–2299/VRC RETRANS switch to ON. The AM-1780/VRC INSTALLATION should also be set to RETRANS to remove control of relay site radios from the crewmembers.
		b. Receiver-transmitters are not set up for squelch operation.	*b.* On each receiver-transmitter, set the SQUELCH switch to ON (OLD ON or NEW ON, as appropriate).
		c. Loose cable connections.	*c.* Tighten cable connections at C–2299/VRC cable receptacles, and at receptacles J511 and and J509 on the AM–1780/VRC.
		d. Defective C–2299/VRC	*d.* Higher maintenance level trouble-shooting is required (TM 11–5820–401–12).

CHAPTER 5

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. PREVENTIVE MAINTENANCE

5–1. Scope of Organizational Preventive Maintenance

The functions in *a*, *b*, and *c* below are normally performed by the organizational maintenance facility as part of the preventive maintenance functions. Troubleshooting and maintenance instructions are provided in section II of this chapter.

a. Preventive maintenance checks and services (para 5–2, table 5–1).

b. Lubricating parts (para 5–3).

c. Touchup painting (para 5–4).

d. Tool Kit, Electronic Equipment TK–101/G is required for tools used to tighten loose parts in the system.

5–2. Preventive Maintenance, General

To insure that equipment is always ready for operation, it must be inspected periodically and systematically so that defects may be discovered and corrected before they result in serious damage or failure. The necessary quarterly preventive maintenance checks and services to be performed are listed in table 5–1. Defects discovered during inspection will be noted for future correction to be made as soon as the inspection is completed. Stop operation immediately if a deficiency is noted during operation which could damage the equipment. Record all deficiencies together with the corrective action taken; use DA Form 2404 (TM 38–750).

Table 5–1. Organizational Preventive Maintenance Checks and Services—Quarterly Schedule

Item No.	Item to be inspected	Procedure	Reference
		NOTE Perform the following operations on those items that are applicable to the installation. For example: when C–2296/VRC is not in the installation, item 8 is not required to be performed.	
		GENERAL	
1	PUBLICATIONS	Check to see that required operator and organizational maintenance manuals are on hand, including latest changes.	DA Pam 310–4 and app. A.
2	EQUIPMENT MODIFICATIONS	Check to see whether modification work orders (MWOs) are required or are scheduled for application on the following:	DA Pam 310–7.
		a. Radio system equipment	*a*. Para 1–9*e*.
		b. AN/VIC–1(V) and components	*b*. Para 1–7.
		c. Vehicle electronic equipment harness.	*c*. Para 1–9*a*(2).
		d. Vehicular installation kit	*d*. Para 1–9*b*.
		e. Accessory kit for electronic equipment harness.	*e*. Para 1–9*a*(3).
3	AUDIO ACCESSORIES	Perform the following:	
		a. Put a light coating of silicone grease on O-rings of cable connectors.	*a*. Para 5–3*b*; fig. 5–1.

Table 5–1. Organizational Preventive Maintenance Checks and Services—Quarterly Schedule—Continued

Item No.	Item to be inspected	Procedure	Reference
		b. Replace audio accessories in which cable insulation or any parts are broken.	
		c. Check the audio accessory connector for the following: (1) The gland nut is tight. (2) The spring-loaded connector pin assembly appears to be in proper position and is not loose. Check its spring action by pressing down on it. (3) Check to see that the three small keys are not broken or worn down.	*c.* Fig. 5–1.
4	RADIO EQUIPMENT	Refer to organizational preventive maintenance checks and services in publication covering radio set.	For AN/VRC–12-series radios, refer to TM 11–5820–401–12. For Radio Sets AN/VRC–53, AN/VRC–64, AN/GRC–125, and AN/GRC–160, refer to TM 11–5820–498–12. For radios in AN/VSC–3, refer to TM 11–5815–332–15.
5	MX–7778(*)/GRC	Perform the following: *a.* Check the surfaces to see that they are free of rust and corrosion. *b.* Check to see that all screws and mounting bolts are tight. *c.* Check to see that the cable locknuts are not loose. Tighten with spanner wrench.	*a.* Para 5–4. *c.* Fig. 5–1.
6	AM–1780/VRC	Perform the following: *a.* Check to see that metal surfaces are free of rust and corrosion. Spot-paint bare metal surfaces. *b.* Tighten screws in controls and back cover; tighten mounting screws. Replace missing screws. *c.* Check to see that the POWER indicator lens can be rotated to its two positions and that the lens cap is not loose. Whether the lamp is good is determined during operation of the AM–1780/VRC. *d.* Check to see that the locknuts of cable receptacles are tight and that the cable connectors are positioned at the right angle. *e.* Check to see that dust covers are on unused receptacles. *f.* Check to see that binding posts are not damaged and are not loose.	*a.* Para 5–4. *d.* Fig. 2–2. *e.* D, fig. 2–2. *f.* Fig. 3–1.
7	C–2298/VRC AND C–2297/VRC	Perform the following: *a.* Check to see that metal surfaces are free of rust and corrosion. Spot-paint bare metal surfaces. *b.* Tighten screws in controls and back cover; tighten mounting screws. Replace missing screws.	*a.* Para 5–4.

Table 5–1. Organizational Preventive Maintenance Checks and Services—Quarterly Schedule—Continued

Item No.	Item to be inspected	Procedure	Reference
		c. On C–2297/VRC, check to see that the indicator lens cap can be rotated to its two positions and that the lens cap is not loose. Whether the lamp is good is determined during operation of the unit.	*c.* Fig. 3–3.
		d. Check to see that locknuts of cable receptacles are tight and that cable connectors are positioned at the right angle.	*d.* Fig. 2–3.
8	C–2296/VRC	Perform the following:	
		a. Check to see that metal surfaces are free of rust and corrosion. Spot-paint bare metal surfaces.	*a.* Para 5–4.
		b. Tighten screws in controls and back cover; tighten mounting screws. Replace missing screws.	
		c. Check the H–207/VRC for damage to the case, switch, or retractile cord.	
		d. Check the external call lamp to see that it is not damaged and that it is secured to the box on the vehicle. Whether the lamp is good is determined during operation of the unit.	*d.* Fig. 2–5.
9	C–2299/VRC (connected to AM–1780/VRC).	Perform the following:	
		a. Check to see that metal surfaces are free of rust and corrosion. Spot-paint bare metal surfaces.	*a.* Para 5–4.
		b. Tighten screws in controls and back cover; tighten mounting screws. Replace missing screws.	*b.* TM 11–5820–401–12.
		c. Check to see that locknuts of cable receptacles are tight.	*c.* Fig. 2–3.
10	RADIO-INTERCOM SYSTEM CABLING.	Perform the following:	
		a. Check to see that cables are not damaged and that they are locked to the equipment receptacles.	
		b. Check to see that cable connectors locknuts are tight. Tighten locknuts with spanner wrench.	*b.* Fig. 5–1.
		c. Check to see that all cable clamps are in place, that they hold the cables securely, and that the cable clamp screws are screwed down tightly.	

5–3. Using Lubricants on Connecting Surfaces

There are two kinds of lubricants that can be used on the mating surfaces of the equipment. One is used on the radio whip antenna sections to prevent them from seizing; the other is used on surfaces of preformed packing in the covers of the equipment and the O-rings on connectors (*b* below).

a. Lubricants. Following are typical lubricants that can be used.

(1) Grease, Graphite; Federal Stock No. 9150–753–4648. This is used on radio whip antenna sections.

(2) Insulating Silicon Compound; Federal Stock No. 6850–880–7616; used for O-rings, preformed packing, and gaskets (*b* below).

b. Lubricating O-Rings, Preformed Packing and Gaskets.

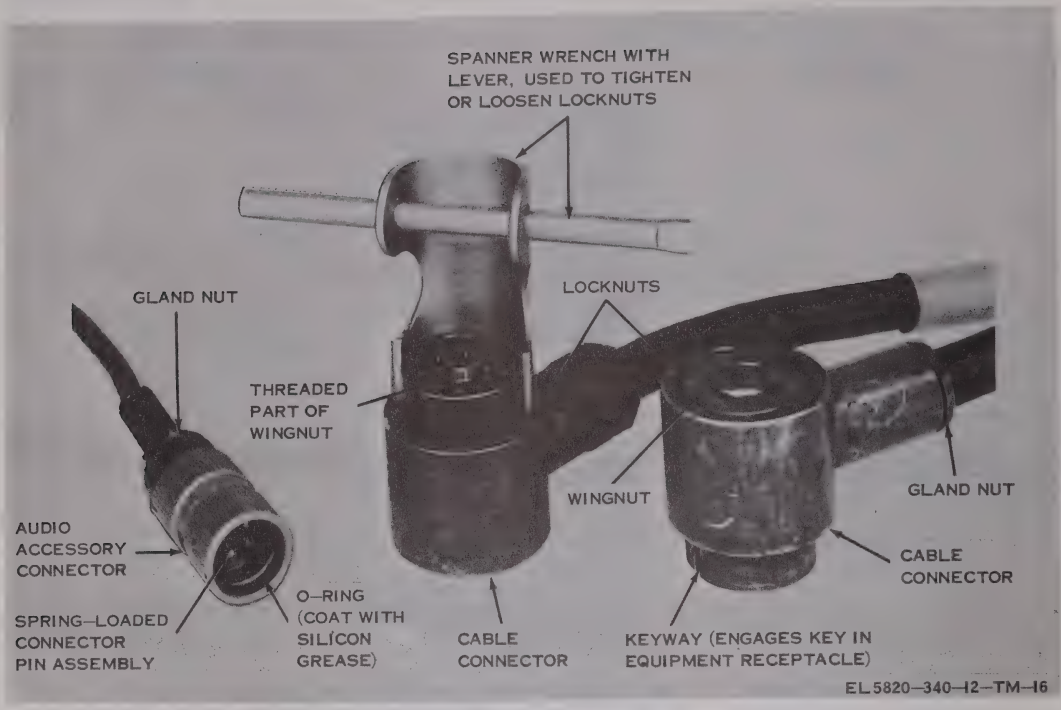

Figure 5-1. Details of cable connectors.

(1) Typical example of O-ring is found in audio accessory cable connectors (fig. 5-1).

(2) Typical examples of preformed packing are found embedded in the covers of the control boxes and radios. Gaskets used in the installation may also be coated with the insulating silicon compound.

CAUTION

Do not let the insulating silicon compound touch electrical contacts or surfaces.

(3) Before applying a thin film of the insulating silicon compound (*a*(2) above) to the surfaces, clean the surface.

5-4. Painting

Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. Refer to applicable painting and refinishing instructions given in SB 11-573 and TB 746-10.

Section II. TROUBLESHOOTING AND MAINTENANCE

5-5. General

a. When troubleshooting procedures identify a piece of equipment as defective, it is either replaced at the organizational maintenance facilities or referred to higher maintenance level for repair.

b. The following equipment is required to troubleshoot and repair the equipment.

(1) Tool Kit, Electronic Equipment TK-101/G.

(2) Multimeter AN/URM-105 (TM 11-6625-203-12).

c. Replacement and repair parts are listed in appendix C.

5-6. Troubleshooting Equipment of Radio-Intercom System

a. General. The procedures in *b* below are used to locate faulty equipment in the radio-intercom system. They apply whether trouble is

in radio communication or in intercom communication.

(1) Before proceeding, perform the checks and corrective measures in the operator's troubleshooting procedures (para 4–4 and 4–5).

(2) Refer to the typical cabling diagram applicable to the radio-intercom system in trouble (fig. 2–4 through 2–7).

(3) Refer to figures FO–1 and FO–2 for power and signal distribution circuits of the radio-intercom system. Refer to TM 11–5820–401–12 for illustrations of power and signal distribution circuits of radio-intercom system used with AN/VRC–12-series radios.

(4) A test cable, CX–4723/VRC, approximately 20 feet long, is required as a temporary substitute for cables in the systems. If the equipment performs satisfactorily using the test cable, install a new cable in place of the original one (SB 11–131).

(5) A test cable, approximately 20 feet long, is required as a temporary substitute for cables and vehicle wiring between the C–2297/VRC and C–2296/VRC. Fabricate it from two CX–7058/VRCs by cutting off the nine-pin connector from each cable and splicing the cable wires together.

(6) Repair information is contained in paragraph 5–7.

(7) When the connection between the driver's control box and the AM–1780/VRC, provided by the vehicle sliprings, is defective, either of the following methods may be used to restore communication on a temporary basis until the vehicle sliprings are repaired.

(*a*) Connect a CX–4723/VRC, of suitable length, between the driver's control box and one of the unused receptacles on the AM–1780/VRC. If there is no available receptacle, connect the cable to the unused receptacle of a C–2298/VRC in the vehicle. Operation of both control boxes are independent of each other. Run the cable in a convenient manner and tie it at appropriate points to the vehicle.

(*b*) Or an extension cable, replacing the retractile cable of the CVC helmet or H–161/U may be used. Such extension cables include Cord Assembly, Electrical, Branched CX–10766/GR (FSN 5995–248–4966; 25-ft extension) and Cord, Assembly, Electrical, Branched CX–10767/GR (FSN 5995–434–5755; 35-ft extension). Connect the extension cable between the driver's audio accessory and a C–2298/VRC in the vehicle.

b. Troubleshooting Radio-Intercom System. After performing each corrective measure, check the operation of the equipment to determine whether normal operating indications are restored. Use Multimeter AN/URM–105 to measure vehicular battery voltage and at points in the electrical system (fig. FO–2). Use it also to measure continuity of cables and circuits to isolate defective components (fig. FO–1).

Item No.	*Symptom*	*Probable trouble*	*Corrective measures*
1	AM–1780/VRC POWER CKT BKR trips to OFF after being set to ON. Power is available at radio.	*a.* Incorrect connection of power cable.	*a.* Perform the following: (1) Set AM–1780/VRC MAIN PWR switch to OFF and POWER CKT BKR switch to OFF. (2) If radio is connected to AM–1780/VRC (fig. 2–5, 2–6, or 2–7), check to see that CX–4723/VRC from "A" radio mount is connected to J501. If it is not, first remove all cable connections from AM–1780/VRC; then connect the CX–4723/VRC from "A" radio mount to J501 and reset POWER CKT BKR switch to ON. (*a*) If the switch trips to OFF, AM–1780/VRC is defective. (*b*) If switch does not trip to OFF, proceed to *b* below. (3) If radio is not connected to AM–1780/VRC (fig. 2–4), power cable CX–4720/VRC should be connected to J508. Proceed to *b* below.

Item No.	Symptom	Probable trouble	Corrective measures
			(4) To prevent incorrect cable connections, label all cable connectors in the system (para 2–5*a*).
		b. Short circuit or ground in cables or control boxes.	*b.* Perform the following: (1) Set AM–1780/VRC MAIN PWR switch to INT ONLY and POWER CKT BKR switch to OFF. (2) Remove, in turn, each cable connection to AM–1780/VRC, except to J501 (or J508 if radio is not provided (fig. 2–4)). As each cable connector is removed, reset POWER CKT BKR switch to ON. (3) When the switch trips to OFF when all cables are removed, AM–1780/VRC is defective. (4) When the switch stays ON when a particular cable is removed, that cable, associated control box, or vehicle wiring is defective. To identify defective component, use procedures in item 2 below, except operate POWER CKT BKR to ON after each substitution.
2	Unable to communicate on intercom from all control boxes; radio is operative and POWER indicator lamp on AM–1780/VRC is lighted.	*a.* Defective cables	*a.* Perform the following: (1) Substitute test cable CX–4723/VRC (*a*(4) above) between J501 on AM–1780/VRC and the MT–1029/VRC. If communication is restored, replace the original cable. (2) While attempting to establish communication from the control boxes, remove, in turn, the cable from the AM–1780/VRC to each control box. When communication is restored, replace the cable the removal of which restored communication.
		b. Defective control box	*b.* If communication ceases when the cable removed in operations in *a*(2) above is reconnected to a control box, replace that control box. Higher maintenance level repair is required.
		c. Defective AM–1780/VRC	*c.* Replace AM–1780/VRC. Higher maintenance level repair is required.
3	Unable to communicate on intercom or radio from one C–2298/VRC.	Defective cable, C–2298/VRC, or AM–1780/VRC.	Perform the following: *a.* Substitute test cable CX–4723/VRC (*a*(4) above) between C–2298/VRC and AM–1780/VRC. If communication is restored, replace original cable; if not, replace C–2298/VRC. *b.* If neither of above reestablish communication, replace AM–1780/VRC.

Item No.	Symptom	Probable trouble	Corrective measures
4	Unable to transmit on intercom and radio from one control box; signals from radio and intercom can be heard.	Defective control box	Replace control box. Higher maintenance level repair is required.
5	Unable to communicate on intercom from all control boxes. Radio operation is satisfactory.	Defective AM-1780/VRC	Replace AM-1780/VRC. Higher maintenance level repair is required.
6	Unable to communicate on radio from all control boxes. Intercom operation is satisfactory. Radio operation is satisfactory when audio accessory is connected directly to radio.	Defective AM-1780/VRC	Replace AM-1780/VRC. Higher maintenance level repair is required.
7	Unable to communicate on intercom and radio from C-2297/VRC.	*a.* Defective cables or C-2297/VRC	*a.* Substitute test cable CX-4723/VRC (*a*(4) above) between C-2297/VRC and AM-1780/VRC. If communication is restored, replace, in turn, the cable connected to the AM-1780/VRC and the one connected to the C-2297/VRC. If communication is still not restored, inspect and repair the vehicle slip rings between the outlet at the driver's position and the outlet at the AM-1780/VRC. If communication is not restored when the test cable is connected to the C-2297/VRC, replace the C-2297/VRC. Higher maintenance level repair is required.
		b. Defective AM-1780/VRC	*b.* Replace AM-1780/VRC. Higher maintenance level repair is required.
8	Unable to communicate on intercom and radio from C-2296/VRC.	*a.* Defective cables	*a.* Substitute the test cable CX-7058/VRC (*a*(5) above) between the C-2297/VRC and the C-2296/VRC. If communication is restored, replace, in turn, CX-7057/VRC (or CX-7055/VRC) and CX-7056/VRC. If communication is still not restored, inspect and repair the vehicle cabling between the C-2297/VRC and the C-2296/VRC.
		b. Defective C-2296/VRC	*b.* If communication is still not restored when the test cable is connected to the C-2296/VRC, replace the C-2296/VRC. Higher maintenance level repair is required.
9	Retransmission: communication between individual receiver-transmitters and distant radios can be accomplished but retransmission operation through the relay site radios and the C-2299/VRC cannot be accomplished.	*a.* Defective cables	*a.* Substitute the test cable CX-4723/VRC (*a*(4) above) between the AM-1780/VRC and one side of the C-2299/VRC and then the other side of the C-2298/VRC. If communication is restored, replace the defective original cable.
		b. Defective C-2299/VRC	*b.* Replace the C-2299/VRC. If communication is restored, C-2299/VRC is defective; higher maintenance level repair is required.
		c. Defective cables between AM-1780/VRC and radios.	*c.* Substitute the test cable CX-4723/VRC between one radio mount and the AM-1780/VRC then between

Item No.	Symptom	Probable trouble	Corrective measures
			the other radio mount and the AM-1780/VRC. If communication is restored, replace the defective original cable.
		d. Defective AM-1780/VRC	d. Replace the AM-1780/VRC. Higher maintenance level repair is required.

5-7. Maintenance of AN/VIC-1(V) and Radio-Intercom System

a. Repair of the AM-1780/VRC and the control boxes include replacing front panel knobs, indicator lamps, and dust covers. Replacement parts are listed in appendix C.

b. Parts for components of the radio-intercom system (fig. 2-4 through 2-7) (including the AN/VIC-1(V) (fig. 1-1)) are listed in SB 11-131 under the Federal stock number of the electronic equipment harness (para 1-9*a*(2)), accessory kit (para 1-9*a*(3)), and installation kit (para 1-9*a*(4) and (5)) applicable to the vehicle in which the equipment is installed.

CHAPTER 6

MATERIEL USED IN CONJUNCTION WITH INTERCOMMUNICATION SET AN/VIC-1(V)

6–1. General

Refer to paragraph 1–9 for information covering equipment required to make the AN/VIC–1(V) operational.

6–2. Description of Radio System Equipment

a. AN/VRC–12-Series Radios. The AN/VRC–12-series radios include Radio Sets AN/VRC–12, and AN/VRC–43 through AN/VRC–49. Figure 2–5 shows AN/VRC–12 used with the AN/VIC–1(V); figure 2–6 shows AN/VRC–49 used with the AN/VIC–1(V). These radio sets provide short-range, two-way, radiotelephone communication in 30.00 through 75.95 MHz range using frequency-modulated (fm) transmission and reception. The receiver-transmitters of these radio sets can transmit on low (approximately 5 watts) and high (approximately 35 watts) RF power. Description and operation of the radios in conjunction with the AN/VIC–1(V) in the radio-intercom system are provided in TM 11–5820–401–12.

b. Radio Teletypewriter Set AN/VSC–3. When the AN/VSC–3, which includes Radio Set AN/GRC–106 or AN/GRC–106A, is used with the AN/VIC–1(V), it is connected to J503 of the AM–1780/VRC (fig. 2–5) as "C" radio. Operating procedures are provided in TM 11–5815–332–15.

c. Radio Sets AN/VRC–53, AN/VRC–64, AN/GRC–125, and AN/GRC–160. These radio set configurations are similar to AN/VRC–12-series radios (*a* above) except they transmit only on low power (approximately 5 watts maximum). Figure 2–7 shows AN/VRC–53 or AN/VRC–64 used with the AN/VIC–1(V). Description and operation of the radios in conjunction with the AN/VIC–1(V) in the radio-intercom system are provided in TM 11–5820–498–12.

6–3. Description of Audio Accessories

The following or equivalent audio accessories can be used with the radios and radio system equipment. Information on the use of the audio accessories is discussed in paragraph 3–4.

a. Hand Microphone. The microphone used with the equipment is Microphone, Dynamic (fig. 3–5). It has a push-to-talk switch, a microphone element behind which is a noise-cancelling element, and a retractile cord terminated in a five-pin connector.

b. Headsets. Typical headsets include Headsets, Electrical H–140A/U (TM 11–5965–260–15P) and H–251/U (fig. 3–5). The headsets have a pair of earphones separated by a spring-steel band and each earphone assembly is provided with a rubber cushion to fit over the user's ears. A retractile cord is terminated in a five-pin connector.

c. Handsets. Typical handsets include Handsets H–250/U, H–189/GR (TM 11–5965–280–15), and H–138/GR (TM 11–5965–257–15). A handset includes a dynamic microphone, earphone, and a push-to-talk switch. A retractile cord is terminated in a five-pin connector.

d. Headset-Microphone. Typical headset-microphone is Headset-Microphone H–161/U (TM 11–5965–262–13) (fig. 3–5). It has a pair of earphones similar to those on the headsets (*b* above), and a dynamic microphone mounted on a boom that can be positioned in front of the user's lips. Neck and body bands are used to attach the switch assembly to the user's body. The switch assembly contains a three-position switch and a retractile cord, CX–8650(*)/GR, terminated in a pair of five-pin connectors. The retractile cord is connected to the switch assembly section by means of quick-disconnect connectors (bail-out connectors). In some installation kits, CX–8650(*)/GR may be replaced with longer retractile cord assemblies (para 3–4*a*).

e. Combat Vehicle Crewman (CVC) Helmet T56–6 and Installed Audio Accessory (fig. 3–7). Each crewman is issued his own size CVC helmet. The unit includes straps for adjusting the helmet to the user's head and for holding the earphones of the audio accessory. Maintenance of CVC helmets is provided in TM 10–8400–201–23. A typical audio accessory used in the CVC helmet is Headset-Microphone Kit MK–1039/G (TM 11–5965–282–15) or MK–525/G for large size helmets and MK–526/G for small size helmets

(TM 11-5965-235-12 and TM 11-5965-235-25P). Each audio accessory has a switch assembly attached to the side of the helmet, earphones which are attached inside the helmet, a dynamic microphone mounted on a boom that can be positioned in front of the user's lips, and a retractile cord, CS-8650(*)/GR, with bail-out connectors, and terminated in a pair of five-pin connectors. In some installation kits, CX-8650 (*)/GR may be replaced with longer retractile cord assemblies (para 3-4*a*).

f. Loudspeaker and Extension Cord. Typical loudspeaker available is Loudspeaker LS-454/U (TM 11-5965-255-15P; fig. 3-6). It is provided with a cord terminated in a five-pin connector. The loudspeaker case has a clamp to enable the unit to be mounted in a convenient place near the equipment. Cable Assembly, Special Purpose, Electrical CX-7867/VRC (of various lengths) can be used between the equipment and the loudspeaker to enable the loudspeaker to be located at a distance from the equipment.

6-4. Cable Assemblies Used With Radio Sets and Radio-Intercom Systems

(fig. 2-1)

Following are typical cable assemblies that may be used with the radios and radio-intercom system. Each cable assembly is available in various lengths suitable to the vehicle in which it is used (SB 11-131). Most of the cable assemblies are shown installed in figures 2-4 through 2-7.

a. Cable Assembly, Special Purpose, Electrical CX-4722/VRC. This cable assembly is the control cable between the receiver-transmitters and the antenna matching unit. It has two 12-terminal connectors; a male on one end and female on the other.

b. Cable Assembly, Radio Frequency CG-1773/U. This rf antenna cable assembly is used to connect the radio to the antenna. It is type RG-58/U cable terminated on one end with a right-angle BNC connector and on the other end with a straight BNC connector. An adapter UG-306/U is provided in some installation to provide less strain on the CG-1773/U in its position in the equipment.

c. Cable Assembly, Radio Frequency CG-1127/U. This is a short rf cable assembly used between two R-442(*)/VRCs. It is type RG-58/U terminated on both ends with a right-angle BNC connector.

d. Cable Assembly, Special Purpose, Electrical CX-7055/VRC. This cable has a 14-terminal female connector on one end and a nine-terminal connector on the other.

e. Cable Assembly, Special Purpose, Electrical CX-4723/VRC. This cable is the type most commonly used throughout the radio-intercom system. It is terminated in 18-terminal male connectors at both ends.

f. Cable Assembly, Special Purpose, Electrical CX-7056/VRC. This cable has a nine-terminal male connector on one end and a 14-terminal male connector on the other.

g. Cable Assembly, Special Purpose, Electrical CX-7057/VRC. This cable has a 14-terminal female connector on one end and a nine-terminal male connector on the other.

h. Cable Assembly, Special Purpose, Electrical CX-7058/VRC. This cable has a 9-terminal male connector on each end.

i. Cable Assembly, Special Purpose, Electrical CX-7059/VRC. This cable has a 19-terminal male connector on one end and an 18-terminal male connector on the other.

j. Cable Assembly, Special Purpose, Electrical CX-7060/VRC. This cable has an 18-terminal male connector on one end and a 14-terminal male connector on the other.

k. Cable Assembly, Special Purpose, Electrical CX-7328/VRC. This cable has an 18-terminal male connector on one end and a 10-terminal male connector on the other.

l. Cable Assembly, Special Purpose, Electrical CX-7555/VRC. This cable has an 18-terminal male connector on one end and a 10-terminal male connector on the other.

m. Cable Assembly, Special Purpose, Electrical CX-7621/VRC. This is a short two-wire cable terminated on one end with a four-terminal male connector attached to the C-2296/VRC and a pair of tinned wires on the other end to be attached to the external call lamp on the box containing the C-2296/VRC on the outside of some vehicles.

n. Cable Assembly, Special Purpose, Electrical CX-8595/VRC. This cable has an 18-terminal male connector on both ends.

o. Cable Assembly, Special Purpose, Electrical CX-9640/VRC. This is a five-wire cable terminated on both ends with an 18-terminal male connector.

p. Cable Assembly, Power, Electrical CX-4720/VRC (fig. 2-8). This power cable is terminated on one end with a four-terminal female connector and on the other end the four wires are paired and tinned. The tinned pairs are connected to terminal lugs or a Bendix connec-

tor, as required for the installation of each particular vehicle.

q. Cable Assembly, Power, Electrical CX-4721/VRC. This power cable is terminated on one end with a four-terminal female connector and a four-terminal male connector on the other.

6-5. Power Supply PP-2953(*)/U

The PP-2953(*)/U (TM 11-6130-233-12) is used to provide regulated and filtered 27.2 volts dc from an ac power source. It may be used in fixed installations to provide power for radios or the AM-1780/VRC.

a. Ac power sources may be 115 volts, 50-60 Hz, 4 amperes maximum; 230 volts, 50-60 Hz, 2 amperes, maximum; and 115 volts, 400 Hz, 4 amperes, maximum.

b. The regulated 27.2 volts output (fixed; but variable to 22 volts dc output by internal control) is applied through CX-4721/VRC to the radio or J508 of AM-1780/VRC.

c. Transformer, Variable TF-523/U (TM 11-5950-212-15) can be used with the PP-2953(*)/U to provide controlled ac input when the ac power source voltage is beyond the ac input limits of the PP-2953(*)/U.

APPENDIX A

REFERENCES

DA Pam 310–4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.
DA Pam 310–7	US Army Equipment Index of Modification Work Orders.
SB 11–131	Vehicular Radio Sets and Authorized Installations.
SB 11–573	Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment.
TB 746–10	Field Instructions for Painting and Preserving Electronics Command Equipment.
TM 10–8400–201–23	Organizational and Direct Support Maintenance Manual: General Repair Procedures for Clothing and Individual Equipment.
TM 11–2300–372–14–2	Instructions for Installing Installation Kits, Electronic Equipment MK–1255/VIC–1(V), MK–1256/VIC–1(V), and MK–1257/VIC–1(V) in Truck, Cargo, 1¼ Ton, 6 × 6, M561 for Intercommunication Set AN/VIC–1(V).
TM 11–5820–401–12/ NAVLEX 0967–432–3010	Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools Lists: Radio Sets AN/VRC–12 (5820–223–7412), AN/VRC–43 (5820–223–7415), AN/VRC–44 (5820–223–7417), AN/VRC–45 (5820–223–7418), AN/VRC–46 (5820–223–7433), AN/VRC–47 (5820–223–7434), AN/VRC–48 (5820–223–7435), AN/VRC–49 (5820–223–7437), AN/VRC–54 (5820–223–7567), and AN/VRC–55 (5820–402–2265); Mounting MT–1029/VRC (5820–893–1323) and Mounting MT–1898/VRC (5820–893–1324); Antenna AT–912/VRC (5820–897–6357); Control, Frequency Selector C–2742/VRC (5820–892–3343) and Control, Radio Set C–2299/VRC (5820–892–3340).
TM 11–5820–498–12	Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools Lists: Radio Sets AN/VRC–53, AN/VRC–64, AN/GRC–125, and AN/GRC–160 and Amplifier-Power Supply Groups OA–3633/GRC and OA–3633A/GRC.
TM 11–5915–223–12	Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools Lists: Suppressor, Electrical Transient MX–7778/GRC.
TM 11–5915–224–14	Operator's, Organizational, Direct Support, and General Support Maintenance Manual Including Repair Parts and Special Tools List: Suppressor, Electrical Transient MX–7778A/GRC.
TM 11–5950–212–15	Operator's, Organizational, DS, GS, and Depot Maintenance Manual Including Repair Parts and Special Tools Lists: Transformer, Variable Power TF–523/U.
TM 11–5965–235–12	Organizational Maintenance Manual: Headset-Microphone Kits MK–400/G, MK–401/G, MK–525/G, and MK–526/G.
TM 11–5965–235–25P	Organizational, Direct and General Support, and Depot Maintenance Repair Parts and Special Tools Lists: Headset-Microphone Kits MK–400/G, MK–401/G, MK–525/G, and MK–526/G.
TM 11–5965–255–15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tool Lists: Loudspeaker, Permanent Magnet LS–454/U.

TM 11-5965-257-15	Organizational, DS, GS, and Depot Maintenance Manual Including Repair Parts and Special Tool Lists: Handsets H-138/U and H-138A/U.
TM 11-5965-260-15P	Operator's, Organizational, Field and Depot Maintenance Repair Parts and Special Tool Lists: Headset, Electrical H-140A/U.
TM 11-5965-262-13	Organizational and DS Maintenance Manual Including Repair Parts and Special Tool Lists: Headset-Microphone H-161/U and H-161A/U.
TM 11-5965-280-15	Operator, Organizational, DS, GS, and Depot Maintenance Manual Including Repair Parts and Special Tools List: Handset H-189/GR.
TM 11-5965-282-15	Organizational, DS, FS, and Depot Maintenance Manual Including Repair Parts and Special Tool Lists: Headset-Microphone Kit MK-1039/G.
TM 11-6130-233-12	Operator and Organizational Maintenance Manual Including Repair Parts List: Power Supplies PP-2953/U, PP-2953A/U, PP-2953B/U, and PP-2953C/U.
TM 11-6625-203-12	Operator and Organizational Maintenance: Multimeter AN/URM-105, Including Multimeter ME-77/U.
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 740-90-1	Administrative Storage of Equipment.
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).

APPENDIX B

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure of measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition; i.e., to clean, preserve, drain, paint, or to replenish fuel/lubricants/hydraulic fluids or compressed air supplies.

d. Adjust. Maintain within prescribed limits by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used to precision measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment/system.

h. Replace. The act of substituting a serviceable like-type part, subassembly, module (component or assembly) in a manner to allow the proper functioning of an equipment/system.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module/component/assembly, end item or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (e.g., DMWR) in pertinent technical manuals. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipment/components.

l. Symbols. The uppercase letter placed in the appropriate column indicates the lowest level at which that particular maintenance function is to be performed.

B-3. Explanation of Format

a. Group Number. Column 1 lists group numbers, the purpose of which is to match components, assemblies, subassemblies and modules with the next higher assembly.

b. Functional Group. Column 2 lists the next higher assembly group and the item names of components, assemblies, subassemblies and modules within the group for which maintenance is authorized.

c. Maintenance Functions. Column 3 lists the twelve maintenance functions defined in B–2 above. Each maintenance function required for an item is specified by the symbol among those listed in *d* below which indicates the level responsible for the required maintenance. Under this symbol is listed an appropriate work measurement time value determined as indicated in *e* below.

d. Use of Symbols. The following symbols are used to prescribe work function responsibility:

C—Operator/crew
O—Organization
F—Direct support
H—General support
D—Depot

e. Work Measurement Time. The active repair time required to perform the maintenance function is included directly below the symbol identifying the category of maintenance. The skill levels used to obtain the measurement times approximate those found in typical TOE units. Active repair time is the average aggregate time required to restore an item (subassembly, assembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, fault isolation/diagnostic time, and QA/QC time in addition to the time required to perform specific maintenance functions identified for the tasks authorized in the maintenance allocation chart. This time is expressed in man-hours and carried to one decimal place (tenths of hours).

f. Tools and Test Equipment. This column is used to specify, by code, those tools and test equipment required to perform the designated function.

g. Remarks. Self-explanatory.

B–4. Explanation of Format of Table I (Tool and Test Equipment Requirements)

The columns in table I are as follows:

a. Tools and Equipment. The numbers in this column coincide with the numbers used in the tools and equipment column of the maintenance allocation chart. The numbers indicate the applicable tool for the maintenance function.

b. Maintenance Category. The codes in this column indicate the maintenance category normally allocated the facility.

c. Nomenclature. This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

d. Federal Stock Number. This column lists the Federal stock number of the specific tool or test equipment.

e. Tool Number. Not used.

(Next printed page is B–3)

Section II. MAINTENANCE ALLOCATION CHART - AN/VIC-1(V)

(1) GROUP NUMBER	(2) FUNCTIONAL GROUP COMPONENT ASSEMBLY NOMENCLATURE	(3) MAINTENANCE FUNCTIONS											(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	INTERCOMMUNICATION SET AN/VIC-1(V):													
	AMPLIFIER, AUDIO FREQUENCY AM-1780/VRC													See section III
	CONTROL, INTERCOMMUNICATION SET C-2296/VRC													See section IV
	CONTROL, INTERCOMMUNICATION SET C-2297/VRC													See section IV
	CONTROL, INTERCOMMUNICATION SET C-2298/VRC													See section IV

Section III. MAINTENANCE ALLOCATION CHART AM-1780/VRC

(1) GROUP NUMBER	(2) FUNCTIONAL GROUP COMPONENT ASSEMBLY NOMENCLATURE	(3) MAINTENANCE FUNCTIONS											(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AMPLIFIER, AUDIO FREQUENCY AM-1780/VRC	O 0.10											See table B-1	External
			O 0.25										1	Operational
			F 1.00										4-8	
			D 1.30										4-8	
				O 0.10									2	
					O 0.50								4-8	Interphone amplifier
					D 0.50								4-8	
										O 0.75			2	External parts
										F 1.50			3	A520, A250, A4
										D 2.00			3	
											D 3.00			
												D 4.00		

Section IV. MAINTENANCE ALLOCATION CHART- C-2296, C-2297, C-2298

(1) GROUP NUMBER	(2) FUNCTIONAL GROUP COMPONENT ASSEMBLY NOMENCLATURE	(3) MAINTENANCE FUNCTIONS											(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	CONTROLS, INTERCOMMUNICATION SET C-2296/VRC, C-2297/VRC, and C-2298/VRC	O 0.10											See table B-1	
			O 0.08											Operational test
			F 0.50										4-8	
			D 0.50										4-9	
				O 0.10									2	
										O 0.25			2	External parts
										F 0.58			3	A80, external parts
										D 1.00				
											D 2.00			
												D 3.00		

TABLE I. TOOL AND TEST EQUIPMENT REQUIREMENTS- AM-1780, C-2296, C-2297, C-2298

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
	O	MULTIMETER AN/URM-105	6625-581-2036	1
	O	TOOL KIT, ELECTRONIC EQUIPMENT TK-101/G	5180-064-5178	2
	F,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	3
	F,D	MULTIMETER TS-352B/U	6625-553-0142	4
	F,D	POWER SUPPLY PP-1104/G	6130-542-6385	5
	F,D	SIGNAL GENERATOR AN/URM-127	6625-783-5965	6
	F,D	SPECTRUM ANALYZER TS-723/U	6625-668-9918	7
	F,D	VOLTMETER, ELECTRONIC ME-30/U	6625-643-1670	8
	D	OSCILLOSCOPE AN/USM-281A	6625-228-2201	9

APPENDIX C

ORGANIZATIONAL REPAIR PARTS AND SPECIAL TOOLS LISTS FOR COMPONENTS OF INTERCOMMUNICATION SET AN/VIC-1(V)

Section I. INTRODUCTION

C-1. Scope

This appendix lists repair parts and special tools required for the performance of organizational maintenance of components of Intercommunication Set AN/VIC-1(V).

C-2. General

This appendix is divided into the following sections:

a. Section II. Repair parts for Amplifier, Audio Frequency AM-1780/VRC.

b. Section III. Repair parts for Control, Intercommunication Set C-2296/VRC.

c. Section IV. Repair parts for Control, Intercommunication Set C-2297/VRC.

d. Section V. Repair parts for Control, Intercommunication Set C-2298/VRC.

C-3. Explanation of Columns

The following provides an explanation of the columns in the repair parts lists (sec II through V).

a. Source, Maintenance, and Recoverability (SMR) Codes, Column 1.

(1) *Source code.* The source code includes the first two letters and indicates the manner of acquiring support items for maintenance, repair, or overhaul of end item. Source codes are:

Code	*Explanation*
PA	—Item procured and stocked for anticipated or known usage.
PB	—Item procured and stocked for insurance purposes because essentiality dictates that a minimum quantity be available in the supply systems.
PC	—Item procured and stocked and which otherwise would be code PA except that it is deteriorative in nature.
PE	—Support equipment procured and stocked for initial issue or outfitting to specified maintenance repair activities.
PF	—Support equipment which will not be stocked but which will be centrally procured on demand.
PG	—Item procured and stocked to provide for sustained support for the life of the equipment. It is applied to an item peculiar to the equipment which because of probable discontinuance or shutdown of production facilities would prove uneconomical to reproduce at a later time.
KD	—An item of depot overhaul/repair kit and not purchased separately. Depot kit defined as a kit that provides items required at the time of overhaul or repair.
KF	—An item of a maintenance kit and not purchased separately. Maintenance kit defined as a kit that provides an item that can be replaced at organizational or direct support or general support levels of maintenance.
KB	—Item included in both a depot overhaul/repair kit and a maintenance kit.
MO	—Item to be manufactured or fabricated at organizational level.
MF	—Item to be manufactured or fabricated at direct support maintenance level.
MH	—Item to be manufactured or fabricated at General Support maintenance level.
MD	—Item to be manufactured or fabricated at depot maintenance level.
AO	—Item to be assembled at organizational level.
AF	—Item to be assembled at Direct Support Maintenance level.
AH	—Item to be assembled at General Support maintenance level.
AD	—Item to be assembled at depot maintenance level.
XA	—Item is not procured or stocked because the requirements for the item will re-

Code *Explanation*

sult in the replacement of the next higher assembly.

XB —Item is not procured or stocked. If not available through salvage, requisition.

XC —Installation drawing, diagram instruction sheet, field service drawing, that is identified by manufacturers' part number.

Blank—Support items listed in this RPSTL–TM assigned maintenance and recoverability codes and no source codes can be requisitioned with justification.

NOTE

Cannibalization or salvage may be used as a source of supply for any items source-coded above except those coded XA, and aircraft support items as restricted by AR 700–42.

(2) *Maintenance codes.* Maintenance codes (third and fourth letters) are assigned to indicate the levels of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth position of the Uniform SMR Code Format as follows:

(*a*) *Use (third position).* The maintenance code entered in the third position indicates the lowest maintenance level authorized to remove, replace, and use the support item. The maintenance code entered in the third position indicates one of the following levels of maintenance.

Code *Explanation*

O —Support item is removed, replaced, used at the organizational level of maintenance.

NOTE

A code "C" may be used in this position to denote crew or operator maintenance performed within organizational maintenance.

Code *Explanation*

F —Support item is removed, replaced, used at direct support maintenance level.

H —Support item is removed, replaced, used at general support maintenance level.

D —Support item is removed, replaced, used at depot maintenance level.

(*b*) *Repair (fourth position).* The maintenance code entered in the fourth position indicates whether the item is to be repaired and identifies the lowest maintenance level with the capability to perform complete repair (i.e., all authorized maintenance functions). When a maintenance code is not used, a dash (–) sign is entered. For multiservice equipment/systems or when a code is entered, this position will contain one of the following maintenance codes assigned by the service(s) that require the code.

Code *Application—Explanation*

O —The lowest maintenance level capable of complete repair of the support item is organizational maintenance.

F —The lowest maintenance level capable of complete repair of the support item is direct support maintenance.

H —The lowest maintenance level capable of complete repair of the support item is general support.

D —The lowest maintenance level capable of complete repair of the support item is depot.

L —Repair is restricted to designated specialized repair activity.

Z —Nonrepairable. No repair is authorized.

B —No repair is authorized. The item may be reconditioned by adjusting, lubricating, etc., at the user level. No parts or special tools are procured for the maintenance of this item.

(3) *Recoverability code.* Recoverability codes (fifth letter) are assigned to support items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the uniform SMR Code Format as follows:

Code *Explanation*

Z —Nonrepairable item. When unserviceable, condemn and dispose at the level indicated in the first letter of the maintenance code ((2)(*a*) above).

O —Repairable item. When uneconomically repairable, condemn and dispose at organizational level.

F —Repairable item. When uneconomically repairable, condemn and dispose at direct support level.

H —Repairable item. When uneconomically repairable, condemn and dispose at general support level.

L —Repairable item. Repair, condemnation, and disposal not authorized below depot specialized repair activity level.

A —Item requires special handling or condemnation procedures because of spe-

Code	*Explanation*
	cific reasons (i.e., precious metal content, high dollar value, critical material, or hazardous material).

b. Federal Stock Number. This column indicates the Federal stock number (FSN) assigned to the item and will be used for requisitioning purposes.

c. Description (Column 3). This column indicates the Federal item name and a minimum description required to identify the item. The reference number (A001, A059, A060, etc.) identifies the position of the item in the Provisioning Worksheet. The last line indicates the applicable Federal Supply Code for Manufacturer (FSCM) followed by the manufacturer's part number. The FSCM is used to designate the manufacturer, distributor, or Government agency, and is identified in SB 708–42 and paragraph C–4.

d. Unit of Measure (Column 4). The unit used as a basis of issue; e.g., ea, pr, ft, yd, etc.

e. Quantity Incorporated in Unit (Column 5). The actual quantity of the item in the equipment is listed in this column.

f. 15-Day Organizational Maintenance Allowance (Column 6). The items authorized for use as required but not for initial stockage are identified with an asterisk (*) in the columns.

g. Illustrations (Column 7).

(1) *Figure No., column 7a.* The number of the illustration in which the item is shown is identified in this column.

(2) *Item No. or reference designation, column 7b.* The reference designation used to identify the item in the illustration is identified in this column.

C–4. Federal Supply Code Identification of Manufacturer

Following manufacturer codes are identified as follows:

Code	*Manufacturer/Government Agency*
80063	US Army Electronics Command
96906	Military Standards Promulgated by Standardization Division; Directorate of Logistics Services DSA
08806	General Electric Co., Miniature Lamp Products Dept.
72619	Dialight Corp.

(Next printed page is C–5)

SECTION II. REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE - AM-1780/VRC

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) ILLUSTRATIONS (a) FIG NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
PAOFD	5820892334 2	AMPLIFIER, AUDIO FREQUENCY AM-1780/VRC SMD415276 (80063)							1-1	
PBOZZ	59359333752	CAP, PROTECTIVE, DUST SMB104328 (80063)	ea	10	*	*	*	*	1-1	MP1 thru MP10
PBOZZ	59356561358	KNOB, CONTROL MS1525-2 (96906)	ea	1	*	*	*	*	3-1	MP11
PBOZZ	59356561358	KNOB, CONTROL MS1525-2 (96906)	ea	1	*	*	*	*	3-1	MP12
PBOZZ	59356561358	KNOB, CONTROL MS1525-2 (96906)	ea	1	*	*	*	*	3-1	MP13
PBOZZ	62401557836	LAMP, INCANDESCENT MS25237-327 (96906)	ea	1	*	*	*	*	3-1	DS501

SECTION III. REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE - C-2296/VRC

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) ILLUSTRATIONS (a) FIG NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
PAOFD	58208923337	CONTROL, INTERCOMMUNICATION SET C-2296/VRC SMD415241 (80063)							1-1	
PBOZZ	53558536384	KNOB SMC414399 (80063)	ea	1	*	*	*	*	3-2	04
PBOZZ	59359333752	CAP, DUST SMB104328 (80063)	ea	1	*	*	*	*	1-1	MP21

SECTION IV. REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE - C-2297/VRC

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) ILLUSTRATIONS (a) FIG NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
PBOFD	58208923338	CONTROL, INTERCOMMUNICATION SET C-2297/VRC SMD415221 (80063)							1-1	
PBOZZ	5355823848 4	KNOB SMD415223 (80063)	ea	1	*	*	*	*	3-3	MP8
PBOZZ	53557810319	KNOB MS91525-3 (90906)	ea	1	*	*	*	*	3-3	MP9
PBOZZ	5355853638 4	KNOB SMC414399 (80063)	ea	1	*	*	*	*	3-3	MP10
PBOZZ	62207002680	LAMP, INCANDESCENT 1813 (08806)	ea	1	*	*	*	*	3-3	DS901MP1
PBOZZ	59359333752	CAP, DUST SMB104328 (80063)	ea	2	*	*	*	*	1-1	MP5, MP6
PBOZZ	6201865345 0	LENS, INDICATOR LIGHT 203-0113-203 (72619)	ea	1	*	*	*	*	3-3	DS901MP2

SECTION V. REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE - C-2298/VRC

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) ILLUSTRATIONS (a) FIG NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
									1-1	
PBOFD	58208923339	CONTROL, INTERCOMMUNICATION C-2298/VRC SMD415261 (80063)	ea	1	*	*	*	*	3-4	MP18
PBOZZ	5355823848 4	KNOB SMD415223 (80063)	ea	1	*	*	*	*	3-4	MP19
PBOZZ	5355853638 4	KNOB SMC414399 (80063)	ea	2	*	*	*	*	1-1	MP20, MP21
PBOZZ	59359333752	CAP, DUET SMB104328 (80063)								

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
General, United States Army
Chief of Staff

Official:

VERNE L. BOWERS
Major General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Forms 12-51, operator maintenance requirements for AN/GRC-125, AN/VRC-12, AN/VRC-43, AN/VRC-44, AN/VRC-45, AN/VRC-46, AN/VRC-47, AN/VRC-48, AN/VRC-49, and AN/VRC-53.

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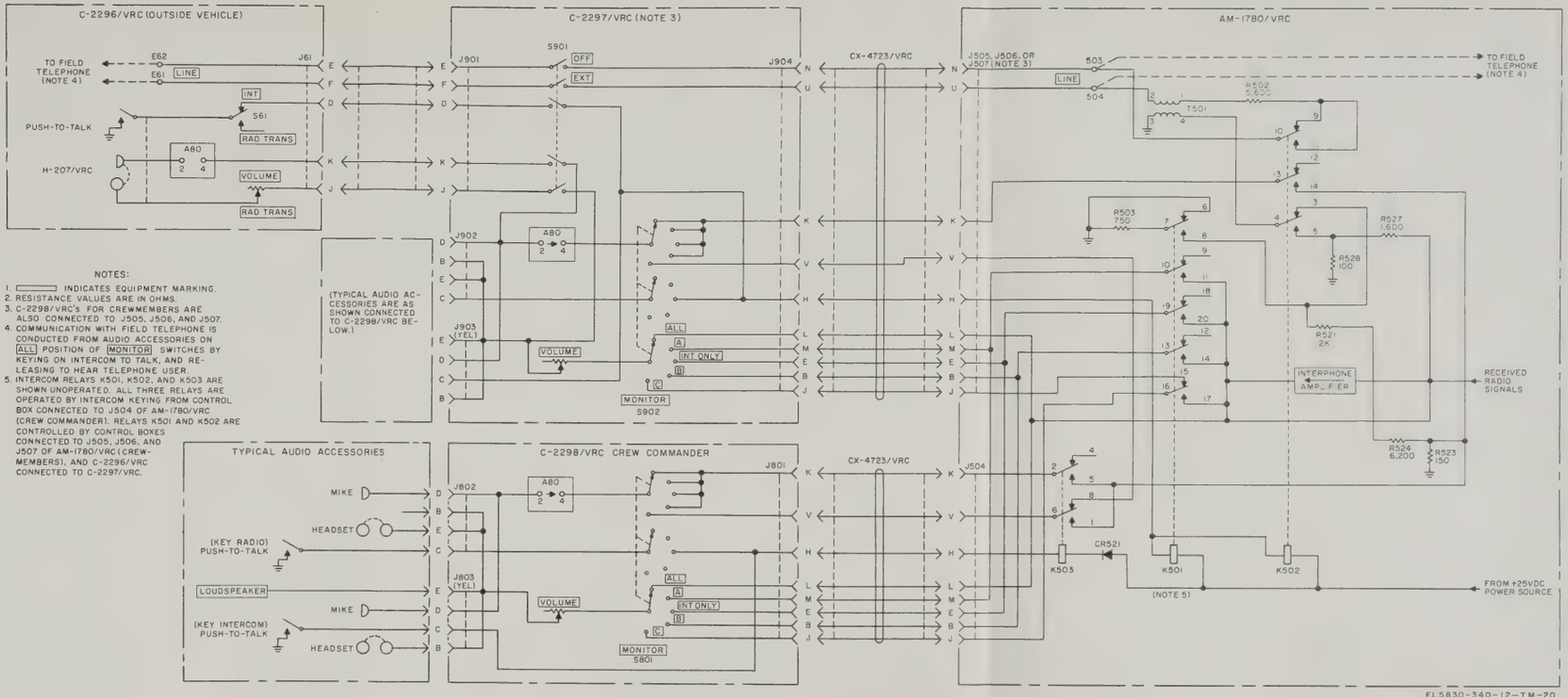

Figure FO-1. ANVIC-1(V), audio signals and keying control circuits (without radios).

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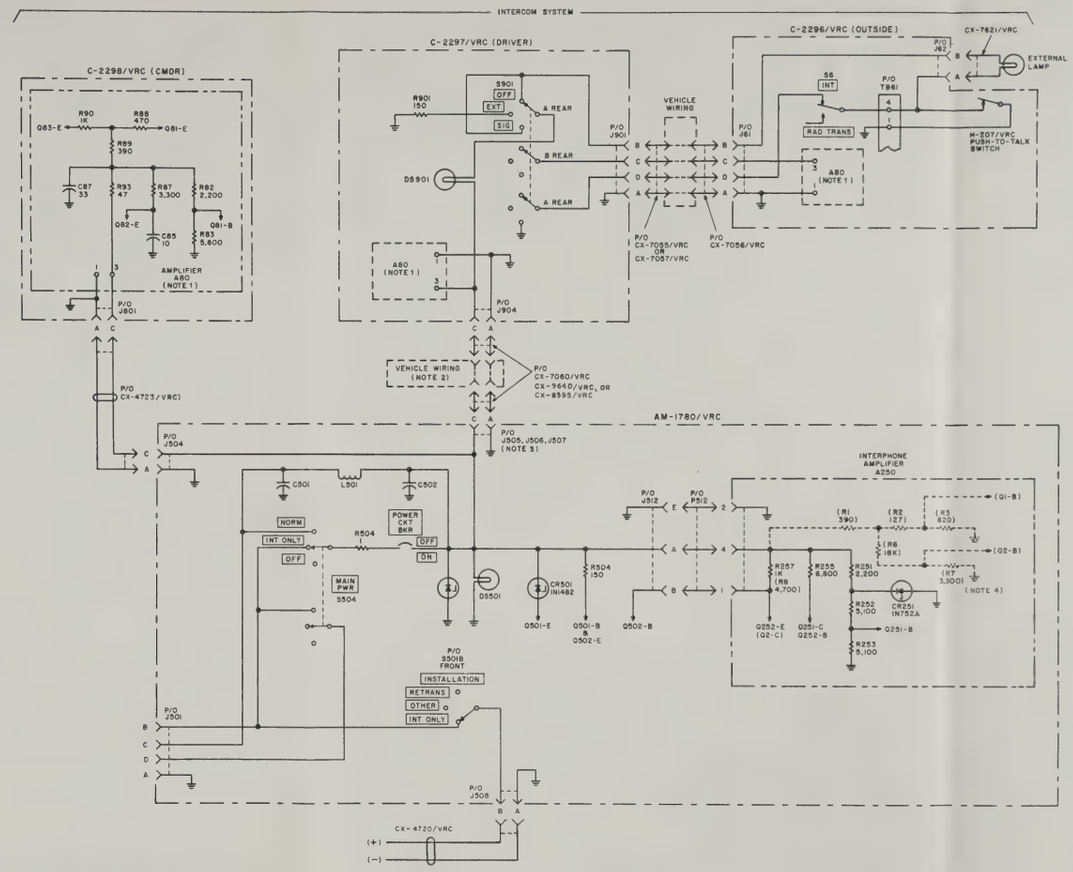

Figure FO-2. AN/VIC-1(V), dc power distribution circuits (without radios).

NOTES:

1. ASSEMBLY A80, SHOWN IN C-2298/VRC, C-2297/VRC, AND C-2296/VRC ARE IDENTICAL. CIRCUIT DETAILS ARE SHOWN IN C-2298/VRC.
2. CX-4723/VRC IS USED INSTEAD OF VEHICLE WIRING INSTEAD OF CX-7060/VRC, CX-9640/VRC, OR CX-8595/VRC IN SOME VEHICLES.
3. C-2298/VRC'S FOR CREWMEMBERS ARE ALSO CONNECTED TO J505, J506, AND J507.
4. PARTS IN DASHED LINES ARE USED IN LATEST FIXED, HIGH-GAIN VERSION OF MODULE A250.
5. UNLESS OTHERWISE INDICATED, RESISTANCES ARE IN OHMS, CAPACITANCES ARE IN UF
6. ▭ INDICATES EQUIPMENT MARKING.

EL5830-340-12-TM-21

CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *5 October 1976*

Operator's and Organizational Maintenance Manual
Including Repair Parts and Special Tools Lists
INTERCOMMUNICATION SET AN/VIC-1(V)

TM 11-5830-340-12, 28 September 1973, is changed as follows:

1. New or changed material is indicated by a vertical bar in the margin.
2. Remove and insert pages as indicated in the page list below:

Remove	*Insert*
i and ii	i through iii
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3. File this change sheet in front of the manual for reference purposes.

By Order of the Secretary of the Army:

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DEPARTMENT OF THE ARMY
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Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools Lists

INTERCOMMUNICATION SET AN/VIC-1(V)

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. General. This manual provides operation, operator and organizational maintenance instructions, and organizational repair parts lists for Intercommunication Set AN/VIC-1(V).

b. Official Nomenclature. Official nomenclature followed by (*) indicates all models of the equipment; thus,

(1) Receiver-Transmitter, Radio RT-246 (*)/VRC represents RT-246/VRC and RT-246A/VRC (part of AN/VRC-12 series radios (*c* below)).

(2) Receiver-Transmitter, Radio RT-524 (*)/VRC represents RT-524/VRC and RT-524A/VRC (part of AN/VRC-12-series radios (*c* below)).

(3) Receiver, Radio R-442(*)/VRC represents R-442/VRC and R-442A/VRC (part of AN/VRC-12-series radios (*c* below)).

(4) Power Supply PP-2953(*)/U represents PP-2953/U, PP-2953A/U, and PP-2953B/U (TM 11-6130-233-12).

(5) Suppressor, Electrical Transient MX-7778(*)/GRC represents MX-7778/GRC (TM 11-5915-223-12) and MX-7778A/GRC (TM 11-5915-224-14).

c. Common Names. Throughout this manual, the following common names are used to represent the indicated equipment

Item	*Common name*	*Reference*
Radio Sets AN/VRC-12 and AN/VRC-43 through AN/VRC-49.	AN/VRC-12-series radios	TM 11-5820-401-12
Receiver-Transmitters, Radio RT-246(*)/VRC and RT-524(*)/VRC.	Receiver-transmitters	TM 11-5820-401-12
Intercommunication Set AN/VIC-1(V).	Radio-intercom system	Para 1-5
Controls, Intercommunication Set C-2296/VRC, C-2297/VRC, and C-2298/VRC.	Control box(es)	Para 1-7, fig. 1-1
Microphone, Dynamic M-80/U; Headsets H-140A/U and H-251/U; Headset-Microphone H-161/U; Loudspeaker IS-454/U; and CVC helmet.	Audio accessories	Para 6-3, fig. 3-5 and 3-6.
Combat Vehicle Crewman Helmet T56-6 with Headset-Microphone Kit MK-1039/U as the audio accessory installed in it.	CVC helmet	Para 6-3*e*, fig. 3-7
Mountings MT-1029/VRC and MT-1898/VRC.	Radio mounts	TM 11-5820-401-12

1-2. Maintenance Forms and Records; Administrative Storage

a. Department of the Army forms and procedures used for equipment maintenance shall be those prescribed in TM 38-750.

b. For procedures, forms and records, and inspection required during administrative storage of equipment, refer to TM 740-90-1.

1-3. Destruction of Army Materiel to Prevent Enemy Use

For information on this subject, refer to TM 750-244-2.

1-4. Reporting of Equipment Publication Improvements

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Report should be made on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded direct to Commander, US Army Electronics Command, ATTN: DRSEL-MA-Q, Fort Monmouth, New Jersey 07703.

Section II. DESCRIPTION AND DATA

1-5. Purpose and Use

Intercommunication Set AN/VIC-1(V) provides voice communication between members of a crew-served weapon and between crewmembers of a vehicle. The AN/VIC-1(V) also provides crewmembers with the facility to communicate on the radios that may be associated with the AN/VIC-1(V) in the vehicle.

a. The AN/VIC-1(V) is used alone in mobile weapons, such as Gun, 175 MM, Self-Propelled, Full-Tracked, M107; Howitzer, 8 inch, Self-Propelled, Full-Tracked, M110; Howitzer, 105 MM, Self-Propelled, M108 and Howitzer, 155 MM, Self-Propelled, M109.

b. The AN/VIC-1(V) is used with vehicular radios (para 1-9*e*) in such combat vehicles as tanks, armored personnel carriers, and armored command posts.

(1) In such vehicles as armored personnel carriers and howitzers, the AN/VIC-1(V) consists of Amplifier, Audio Frequency AM-1780/VRC and Control, Intercommunication Set C-2298/VRC for each crewmember.

(2) In such combat vehicles as tanks, the AN/VIC-1(V) also includes Control, Intercommunication Set C-2297/VRC for the driver, and Control, Intercommunication Set C-2296/VRC mounted on the outside of the vehicle.

(3) The AN/VIC-1(V) is part of the electronic equipment harness of howitzers and combat vehicles ((1) and (2) above). The harness includes the interconnecting cables between components of the AN/VIC-1(V). In the combat vehicles ((2) above), the harness also includes the mounts for the radios, interconnecting cables for the radios, and power cables. Refer to paragraph 1-9 for information on equipment required to make the AN/VIC-1(V) operational.

(4) Communication on the AN/VIC-1(V) system is provided for the crewmembers by means of CVC helmets or headset-microphone sets.

c. The AM-1780/VRC and C-2296/VRC can be connected through field wires to local battery telephones to enable the telephone users to communicate with the crewmembers.

1-6. Technical Characteristics

a. Control Boxes C-2296/VRC, C-2297/VRC, and C-2298/VRC.

Frequency range	500 to 3,000 Hz.
Intercom function	Provides communication between crewmembers.
Radio function	Provides communication on all radios connected to AM-1780/VRC.
Audio accessories:	
Microphone impedance	150 ohms ±15 percent.
Headset and loudspeaker impedance	600 ohms ±20 percent.
LINE binding posts of C-2296/VRC	600 ohms ±20 percent.
Power requirements	22 to 30 volts dc.

b. Amplifier, Audio Frequency AM-1780/VRC.

Frequency range	500 to 3,000 Hz.
Power control	Controls dc power to radios and control boxes.
Radio function	Provides control of radios selected by control boxes.
Intercom function	Provides communication (intercom) between control boxes.
Circuit impedances:	
Microphone circuits	150 ohms ±20 percent.
Headset and loudspeaker circuits	150 ohms ±20 percent.
LINE binding posts	600 ohms ±20 percent.
AUDIO INPUT binding posts	5,000 ohms.
Radio transmitter microphone input circuit	150 ohms ±20 percent.
Radio receiver audio output circuits	150 ohms ±20 percent.
Power requirements	22 to 30 volts dc.

1-7. Components of AN/VIC-1(V)

The configurations of the AN/VIC-1(V) are not operational, as such, but require interconnecting cables, dc power, and audio accessories; see paragraph 1-9 for details.

a. AN/VIC-1(V) Components. The AN/VIC-1(V), as part of the electronic harness of various vehicles (para 1-7*b*(3)), includes some of the following items:

NOTE

A single package, entitled Intercommunication Set AN/VIC-1(V) currently under NSN 5830-00-856-3273, which includes one AM-1780/VRC and two C-2298/VRC, will be deleted from the supply system and SB 700-20 by 1st quarter CY 77.

b. Interconnecting Cables. Typical interconnecting cables, of the proper lengths, are shown in figures 2-4 through 2-8.

c. Radio Equipment. When a particular vehicle is authorized radio equipment, the electronic equipment harness includes Radio Mounts MT-1029/VRC and MT-1898/VRC (fig. 2-5, 2-6, and 2-7). The radio components are supplied by the using organization.

d. MX-7778(*)/GRC. The MX-7778(*)/GRC is part of the electronic harness (*c* above). Instructions for mounting the installation kit for the MX-7778(*)/VRC are provided in TB 11-2300-457-30.

e. Installation Kit. Installation kits which include the AN/VIC-1(V) components are provided for wheeled and similar type vehicles (para 1-9*b*).

1-8. Description of AN/VIC-1(V)
(fig. 1-1)

a. Amplifier, Audio Frequency AM-17801/VRC.

(1) The AM-1780/VRC is the main junction box for the AN/VIC-1(V). It provides control of the dc power to the associated control boxes (*b*, *c*, and *d* below), and to the radio system that may be connected to the AM-1780/VRC. It also amplifies and controls the audio signals in the intercommunication and radio circuits.

(2) All operating controls are provided on the front panel. Ten receptacles are provided on the top, bottom and sides for connection to the control boxes and the radios. Two pairs of binding posts are provided on the front panel for connection to a telephone and the audio output of an auxiliary radio. Mounting lugs are provided on the sides. Captive screws hold the gasket-sealed back cover. All controls and receptacles are waterproof.

b. Control, Intercommunication Set C-2298/VRC.

(1) When an audio accessory is connected to the C-2298/VRC, the crewmember can elect, by means of the MONITOR switch and the audio accessory controls, to communicate on the intercom circuit with other crewmembers, or on the radio(s) connected to the AM-1780/VRC.

(2) The MONITOR switch is located on the front panel; the VOLUME control is located on the bottom of the box. A cable receptacle on each side of the box provides connection to the AM-1780/VRC (or another C-2298/VRC). Receptacles on the bottom provide connection to audio accessories. Mounting lugs are provided on the sides. Captive screws hold the gasket-sealed back cover.

c. Control, Intercommunication Set C-2296/VRC.

Item	NSN	Dimensions (in.)			Qty
		Height	Depth	Width	
Amplifier, Audio Frequency AM-1780/VRC [a]	5820-00-892-3342	3¾	5¾	9⅜	1
Control, Intercommunication Set C-2298/VRC [a]	5820-00-892-3339	4½	3¾	3¾	See note *b* below.
Control, Intercommunication Set C-2297/VRC [a]	5820-00-892-3337	----------	----------	----------	See note *c* below.
Control, Intercommunication Set C-2296/VRC [a]	5820-00-892-3338	----------	----------	----------	See note *c* below.

[a] The components are installed in the vehicle with the required mounting hardware.

[b] One C-2298/VRC is provided each crewmember.

[c] In some vehicles, one C-2297/VRC is provided for the driver's position and one C-2296/VRC is mounted on the outside of the vehicle.

(1) The C–2296/VRC is provided with Handset H–207/VRC to enable the user to communicate on the intercom circuit with other crewmembers, or on the radio(s) connected to the AM–1780/VRC.

(2) The radio and intercom control switch and VOLUME control are located on the front panel. A cable receptacle on the left side provides connection through the vehicle wiring to the C–2297/VRC located inside the vehicle. A cable receptacle on the right side provides connection of the cable assembly to an external call light mounted in the cover of the box containing the C–2296/VRC. A pair of binding posts provide connection to a telephone. Mounting lugs are provided on the sides. Captive screws hold the gasket-sealed back cover.

(3) The H–207/VRC has a push-to-talk switch, a dynamic microphone and an earphone, and a retractile cord connected to the C–2296/VRC.

d. Control, Intercommunication Set C–2297/VRC.

(1) When an audio accessory is connected to the C–2297/VRC, the crewmember can elect, by means of the MONITOR switch and the audio accessory controls, to communicate on the intercom circuit with other crewmembers, or on the radio(s) connected to the AM–1780/VRC.

(2) The MONITOR and SIG-EXT-OFF switches are located on the front panel; the VOLUME control is located on the bottom of the box. When the SIG-EXT-OFF switch is in EXT position, the C–2296/VRC (*c* above) is enabled to become part of the radio and intercom circuits. A cable receptacle on the left side provides connection to the AM–1780/VRC; the cable receptacle on the right side provides connection through the vehicle wiring to the C–2296/VRC. Receptacles on the bottom provide connection to audio accessories. Mounting lugs are provided on the sides. Captive screws hold the gasket-sealed back cover.

1–9. Equipment Required to Make AN/VIC–1(V) Operational

a. General. Items required to make the AN/VIC–1(V) operational are supplied by various means, depending on the particular vehicle in which it is installed. Dc power (22–30 volts dc) is provided by the vehicular electrical system.

(1) Supply Bulletin (SB) 11–131 lists the parts and Federal stock numbers of the vehicular electronic equipment harnesses and installation kits which contain the AN/VIC–1(V), and the accessory kits required for the harness installation.

(2) The electronic equipment harness *is part of* tracked vehicles (*c* below). It includes the AN/VIC–1(V), radio mounts, interconnecting and power cables, mounting brackets for the various components, and the MX–7778(*)/GRC. The basic radio set components are provided by the using organization.

(3) Accessory kits complement the electronic equipment harnesses. They include audio accessories, some interconnecting cables, the whip antenna parts for use with Receiver, Radio R–442(*)/VRC (used in some AN/VRC–12-series radio configurations), and instructions for installing the harness and the accessory kit. The accessory kits are not part of the electronic equipment harness; thus, they are removed and used on another vehicle when the vehicle is turned in.

(4) Installation kits contain appropriate audio accessories, radio mounts, interconnecting cables and hardware necessary to mount the AN/VIC–1(V) in the vehicle. The kits are not part of the vehicle; thus, they are removed and used on another vehicle when the vehicle is turned in. Installation instructions for the kits are provided in TM 11–2300–372–14–2.

(5) A general purpose installation kit is provided for non-vehicular installation. It includes audio accessories, radio mounts, interconnecting cables, power cable, and general purpose mounting hardware. A power supply such as Power Supply PP–2953(*)/U is required to operate the equipment.

b. Wheeled Vehicles. A representative wheeled vehicle in which the AN/VIC–1(V) is used is Truck, Cargo, 1¼ Ton, 6 × 6, M561. The items required to install the equipment are provided in the installation kit (*a*(4) above).

c. Tracked Vehicles.

(1) Representative tracked vehicles include: Tank, Full Tracked, M60A1; Carriers, Personnel, Armored, M113 and M114; Carrier, Command Post M577; and howitzers (para 1–5*a*).

(2) The items required for installation and operation of the AN/VIC–1(V) are provided in the electronic equipment harness and the accessory kit (*a*(2) and (3) above) for the particular vehicle.

(3) The audio accessory for some tracked vehicles is contained in the CVC helmets provided for each of the crewmembers.

d. Marine Craft. Generally, installation harnesses in marine craft are considered in the same category as those for tracked vehicles (*c*

APPENDIX B

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1. General

This appendix provides a summary of the maintenance operations for the AN/VIC-1(V). It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. Maintenance Function

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition; i.e., to clean, preserve, drain, paint, or to replenish fuel/lubricants/hydraulic fluids or compressed air supplies.

d. Adjust. Maintain within prescribed limits by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specific variable elements of an item to about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment/system.

h. Replace. The act of substituting a serviceable like-type part, subassembly, model (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module/component/assembly, end item or system. This function does not include the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

j. Overhaul. That periodic maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (e.g., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipment/components.

B-3. Column Entries

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "worktime" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "worktime" figure will be shown for each category. The number of man-hours specified by the "worktime" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. If an intermediate facility (L) is not available, this category of maintenance will be accomplished at depot. If an intermediate facility (L) has been designated, the maintenance information required to perform this category of maintenance will be provided in the DMWR. Subcolumns of column 4 are as follows:

C—Operator/Crew
O—Organizational
F—Direct Support
H—General Support
D—Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

B–4. Tool and Test Equipment Requirements (Table 1)

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for Manufacturers (5-digit) in parentheses.

(Next printed page is B–3)

SECTION II MAINTENANCE ALLOCATION CHART FOR INTERCOMMUNICATION SET AN/VIC-1(V)

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT
			C	O	F	H	D	
00	INTERCOMMUNICATION SET AN/VIC-1(V)	Inspect	0.25					
		Service[1]	0.5					
		Test[2]		0.5				
		Install		0.5				2
		Repair[3]		1.0				1,2
01	AMPLIFIER, AUDIO FREQUENCY AM-1780/VRC	Inspect	0.25					
		Service[1]	0.5					
		Test[2]		0.25				
		Test[3]			1.0			4 thru 11
		Test[4]					1.0	4 thru 11
		Adjust[5]			0.5			5 thru 8,10
		Replace		0.25				2
		Repair[6]		1.0				2
		Repair[7]			1.5			3
		Repair[8]					2.0	3
		Rebuild					3.0	
0101	AMPLIFIER SUBASSEMBLY A520 (ASSEMBLY A3)	Test			0.75			5 thru 8,10
		Replace			1.0			3
		Repair					1.5	
		Adjust[5]			0.5			5 thru 8,10
010101	AMPLIFIER, AUDIO FREQUENCY A250 (ASSEMBLY A2)	Test			0.5			5 thru 8,10
		Adjust			0.5			5 thru 8,10
		Replace			0.5			3
		Repair					1.0	
0102	ELECTRICAL ASSEMBLY A4 (HEATSINK)	Test			0.5			5 thru 8,10
		Replace			0.5			3
		Repair					1.0	
02	CONTROL, INTERCOMMUNICATION SET C-2296/VRC	Inspect	0.1					
		Test[2]	0.1					
		Test			0.5			4 thru 8,10 thru 19
		Test[4]					0.5	4 thru 19
		Service[1]		0.1				2
		Repair[6]		0.25				1,2
		Repair[7]			0.75			3 thru 8,10,11, 12
		Repair[8]					1	3 thru 8,10,11, 12
		Replace		0.5				2
		Rebuild					3	
0201	MODULE A80	Test			0.5			4 thru 8,10,11, 12
		Replace			0.5			3
		Repair					1	3 thru 12
0202	HANDSET	Inspect	0.1					
		Replace			0.5			3
		Repair[9]			0.5			3

See footnotes at end of chart.

SECTION II MAINTENANCE ALLOCATION CHART FOR INTERCOMMUNICATION SET AN/VIC-1(V) (CONTINUED)

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT
			C	O	F	H	D	
03	CONTROL, INTERCOMMUNICATION SET C-2297/VRC	Inspect	0.1					
		Test[2]	0.1					
		Test			0.5			4 thru 8,10,11, 12
		Test[4]					0.5	4 thru 12
		Service[1]		0.1				2
		Repair[6]		0.25				1,2
		Repair[7]			0.75			3 thru 8,10,11, 12
		Repair[8]					1	3 thru 8,10,11, 12
		Replace		0.25				2
		Rebuild					3	
0301	MODULE A80 (SEE GROUP 0201)							
04	CONTROL, INTERCOMMUNICATION SET C-2298/VRC	Inspect	0.1					
		Test[2]	0.1					
		Test			0.5			4 thru 8, 10 thru 19
		Test					0.5	4 thru 19
		Service[1]		0.1				2
		Repair[6]		0.25				1,2
		Repair[7]			0.75			3 thru 8,10,11, 12
		Repair[8]					1	3 thru 8,10,11, 12
		Replace		0.25				2
		Rebuild					3	
0401	MODULE A80 (SEE GROUP 0201)							

(1) Preventive maintenance.
(2) Operational test.
(3) Major component or cable replacement.
(4) All tests.
(5) Interphone amplifier.
(6) Replacing lamp, knobs, covers.
(7) Replacing amplifier and module subassembly.
(8) All repairs.
(9) Replacing elements, cord, switch, and boot.

TABLE 1. TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
INTERCOMMUNICATION SET AN/VIC-1(V)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O	MULTIMETER, AN/URM-105	6625-00-581-2036	
2	O	TOOL KIT, ELECTRONIC EQUIPMENT TK-101/G	5180-00-064-5178	
3	F,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-00-605-0079	
4	F,D	MULTIMETER TS-352B/U	6625-00-999-7465	
5	F,D	POWER SUPPLY PP-1104/G	6130-00-542-6385	
6	F,D	SIGNAL GENERATOR AN/URM-127	6625-00-783-5965	
7	F,D	SPECTRUM ANALYZER TS-723/U	6625-00-668-9918	
8	F,D	VOLTMETER, ELECTRONIC ME-30/U	6625-00-643-1670	
9	D	OSCILLOSCOPE AN/USM-281A	6625-00-228-2201	
10	F,D	TEST CABLE NUMBER 1		
11	F,D	TEST CABLE NUMBER 2		
12	F,D	CABLE ASSEMBLY CG-1471/U (3 FT)	6625-00-880-6081	
13	F.D	TEST BOX (LOCALLY FABRICATED)		
14	F,D	RECEIVER-TRANSMITTER, RADIO RT-524/VRC	5820-00-892-0622	
15	F,D	MOUNTING MT-1029/VRC	5820-00-893-1323	
16	F,D	RF WATTMETER AN/URM-120	6625-00-813-8340	
17	F,D	CONTROL, INTERCOMMUNICATION C-2297/VRC	5820-00-892-3338	
18	F,D	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-4723/VRC (5 FEET)	5995-00-823-2883	
19	F,D	CABLE ASSEMBLY, POWER ELECTRICAL CX-4720/VRC (10 FEET)	5995-00-823-2726	

APPENDIX C

ORGANIZATIONAL MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

C-1. Scope

This appendix lists repair parts and special tools required for performance of organizational maintenance of the AN/VIC-1(V).

C-2. General

This Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of repair parts authorized for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending numerical sequence, with the parts in each group listed in figure and item number sequence.

b. Section III. Special Tools List. Not applicable.

c. Section IV. National Stock Number and Part Number Index. A list, in ascending National item identification number (NIIN, last 9 digits) sequence, of all National stock numbers appearing in the listings, followed by a list, in alphameric sequence, of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

C-3. Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

a. Illustration. This column is divided as follows:

(1) *Figure number.* Indicates the figure number of the illustration in which the item is shown.

(2) *Item number.* The number used to identify each item called out in the illustration.

b. Source, Maintenance, and Recoverability Codes (SMR).

(1) *Source code.* Source codes are assigned to support items to indicate the manner of acquiring support items for maintenance, repair, or overhaul of end items. Source codes are entered in the first and second positions of the Uniform SMR Code format as follows:

Code	*Definition*
PA	Item procured and stocked for anticipated or known usage.
XD	A support item that is not stocked. When required, item will be procured through normal supply channels.

NOTE

Cannibalization or salvage may be used as a source of supply for any items source-coded above, except those coded XA, XD, and aircraft support items as restricted by AR 700-42.

(2) *Maintenance code.* Maintenance codes are assigned to indicate the levels of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the Uniform SMR Code format as follows:

(*a*) The maintenance code entered in the third position will indicate the lowest maintenance level authorized to remove, replace, and use the support item. The maintenance code entered in the third position will indicate the following level of maintenance:

Code	*Application/Explanation*
O	Support item is removed, replaced, used at the organizational level.

(*b*) The maintenance code entered in the fourth position indicates whether the item is to be repaired and identifies the lowest maintenance level with the capability to perform complete repair (i.e., all authorized maintenance functions). This position will contain the following maintenance code:

Code	*Application/Explanation*
Z	Nonreparable. No repair is authorized.

(3) *Recoverability code.* Recoverability codes are assigned to support items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth

position of the Uniform SMR Code format as follows:

Recoverability codes	*Definition*
Z	Nonreparable item. When unserviceable, condemn and dispose at the level indicated in position 3.

c. National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

d. Part Number. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements, to identify an item or range of items.

NOTE

When a stock-numbered item is requisitioned, the repair part received may have a different part number than the part being replaced.

e. Federal Supply Code for Manufacturer (FSCM). The FSCM is a 5-digit numeric code listed in SB 708–42 which is used to identify the manufacturer, distributor, or Government agency, etc.

f. Description. Indicates the Federal item name and, if required, a minimum description to identify the item. Items that are included in kits and sets are listed below the name of the kit or set with the quantity of each item in the kit or set indicated in the quantity incorporated in unit column.

g. Unit of Measure (U/M). Indicates the standard of the basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr, etc.). When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

h. Quantity Incorporated in Unit. Indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly.

C–4. Special Information

(Not applicable)

C–5. How to Locate Repair Parts

a. When National stock number or part number is unknown:

(1) *First.* Using the table of contents, determine the functional group within which the repair part belongs. This is necessary since illustrations are prepared for functional groups and listings are divided into the same groups.

(2) *Second.* Find the illustration covering the functional group to which the repair part belongs.

(3) *Third.* Identify the repair part on the illustration and note the illustration figure and item number of the repair part.

(4) *Fourth.* Using the Repair Parts Listing, find the figure and item number noted on the illustration.

b. When National stock number or part number is known:

(1) *First.* Using the Index of National Stock Numbers and Part Numbers, find the pertinent National stock number or part number. This index is in ascending NIIN sequence, followed by a list of part numbers in ascending alphameric sequence, cross-referenced to the illustration figure number and item number.

(2) *Second.* After finding the figure and item number, locate the figure and item number in the repair parts list.

C–6. Abbreviations

(Not applicable)

(Next printed page is C–4)

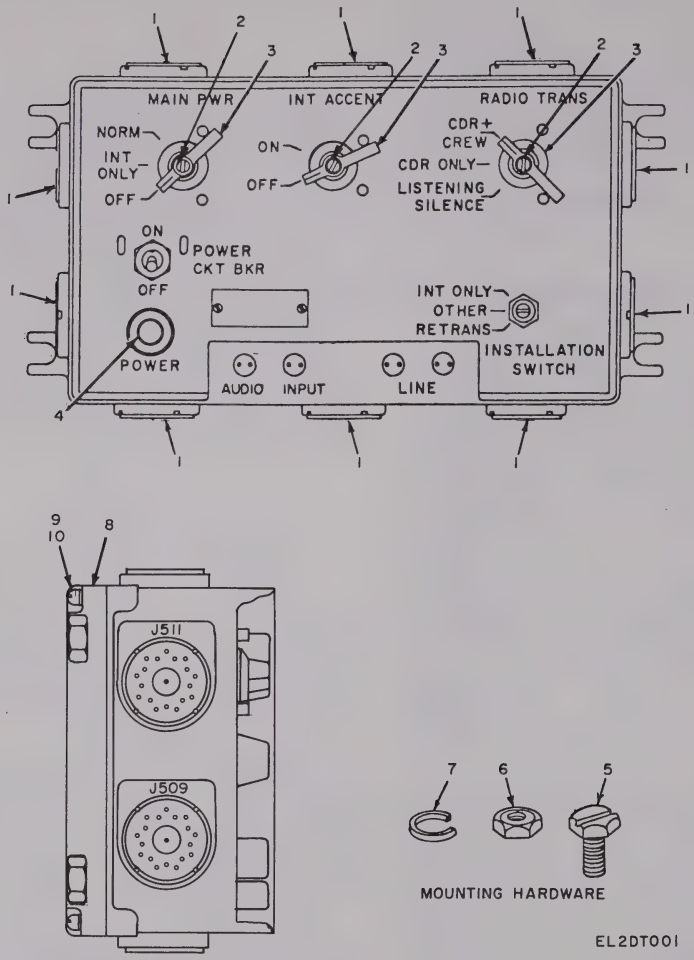

Figure C-1. Amplifier, Audio Frequency AM-1780/VRC, parts location.

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION USABLE ON CODE	(7) UNIT OF MEAS	(8) QTY INC IN UNIT
						GROUP: 00 INTERCOMMUNICATION SET AN/VIC-1(V) GROUP: 01 AMPLIFIER, AUDIO FREQUENCY AM-1780/VRC		
C-1	1	PAOZZ	5935-00-933-3752	SMB104328	80063	CAP, DUST	EA	10
C-1	2	PAOZZ	5305-00-865-3895	MS21090-0621	96906	SCREW, SELF-LOCKING	EA	3
C-1	3	PAOZZ	5935-00-656-1358	MS1525-2	96906	KNOB, CONTROL	EA	3
C-1	4	PAOZZ	6240-00-155-7836	MS25237-327	96906	LAMP, INCANDESCENT	EA	1
C-1	5	PAOZZ	5306-00-225-9089	MS90726-34	96906	SCREW: PART OF KIT P/N SMB415322	EA	5
C-1	6	PAOZZ	5310-00-582-5615	MS35690-522	96906	NUT: PART OF KIT P/N SMB415322	EA	5
C-1	7	PAOZZ	5310-00-889-2527	MS45904-72	96906	WASHER, LOCK: PART OF KIT P/N SMB415322	EA	10
C-1	8	XDOZZ		SMC415292	80063	COVER ASSEMBLY	EA	1
C-1	9	PAOZZ	5310-00-045-3296	MS35338-43	96906	WASHER, SPLIT	EA	8
C-1	10	PAOZZ	5310-00-823-5837	SMC413884-7	80063	SCREW, MACHINE	EA	8

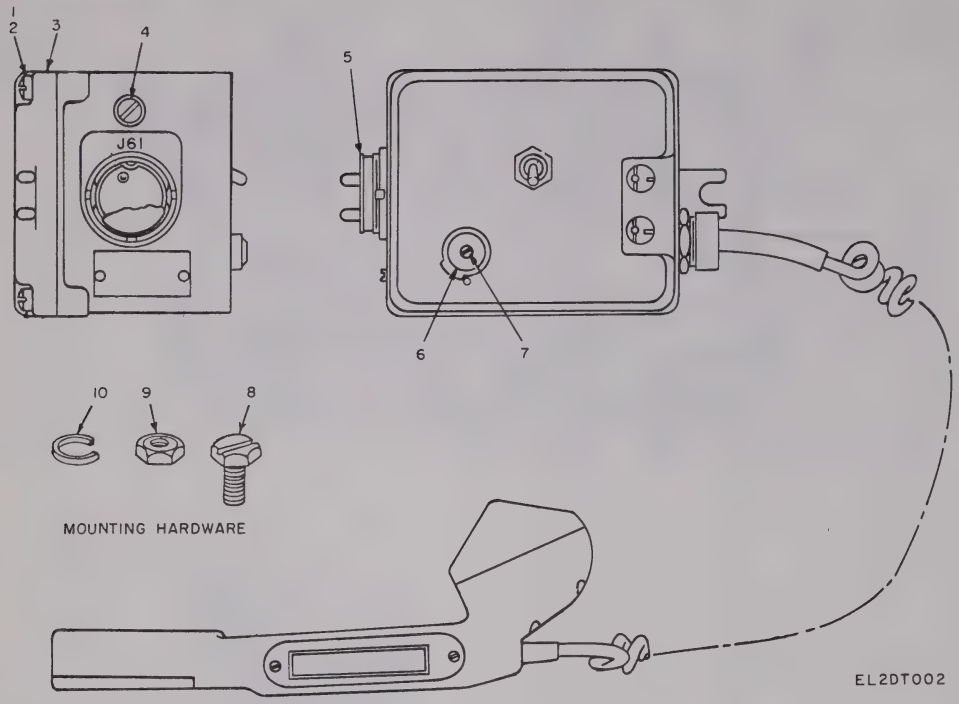

Figure C-2. Control, Intercommunication Set C-2296/VRC, parts location.

SECTION II REPAIR PARTS LIST (CONTINUED)

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION USABLE ON CODE	(7) UNIT OF MEAS	(8) QTY INC IN UNIT
						GROUP: 02 CONTROL, INTERCOMMUNICATIONS SET C-2296/VRC		
C-2	1	PAOZZ	5310-00-823-5837	SMC413884-7	80063	SCREW, EXTERNAL REL BODY	EA	4
C-2	2	PAOZZ	5310-00-045-3296	MS35338-43	96906	WASHER, SPLIT	EA	4
C-2	3	XDOZZ		SMD415254	80063	COVER ASSEMBLY	EA	1
C-2	4	PAOZZ	5305-00-245-8836	SMC414131-2	80063	SCREW, MACHINE	EA	1
C-2	5	PAOZZ	5355-00-933-3752	SMB104328	80063	CAP, DUST	EA	1
C-2	6	PAOZZ	5355-00-853-6384	SMC414399	80063	KNOB	EA	1
C-2	7	PAOZZ	5310-00-853-9676	SMB414395	80063	NUT, SLEEVE	EA	1
C-2	8	PAOZZ	5306-00-225-9089	MS90726-34	96906	SCREW: PART OF KIT P/N SMB415252	EA	3
C-2	9	PAOZZ	5310-00-582-5615	MS35690-522	96906	NUT: PART OF KIT P/N SMB415252	EA	3
C-2	10	PAOZZ	5310-00-889-2527	MS45904-72	96906	WASHER, LOCK: PART OF KIT P/N SMB415252	EA	6

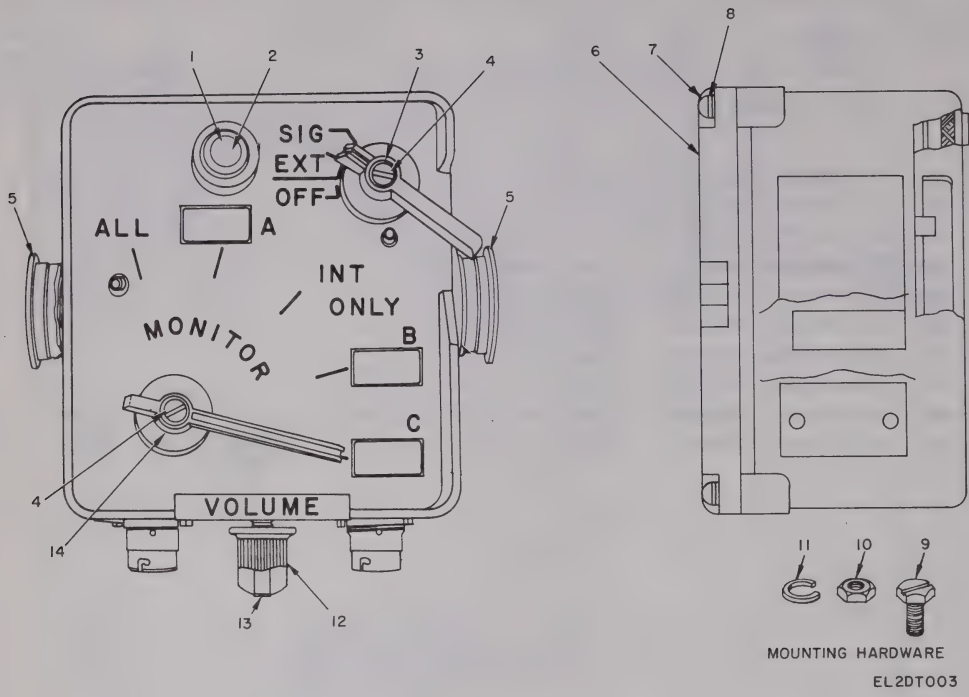

Figure C-3. Control, Intercommunication Set C-2297/VRC, parts location.

SECTION II REPAIR PARTS LIST (CONTINUED)

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION USABLE ON CODE	(7) UNIT OF MEAS	(8) QTY INC IN UNIT
						GROUP: 03 CONTROL, INTERCOMMUNICATIONS SET C-2297/VRC		
C-3	1	PAOZZ	6210-00-892-4455	203-0113-203	72619	LENS, INDICATOR LIGHT	EA	1
C-3	2	PAOZZ	6240-00-155-7836	MS25237-327	96906	LAMP, INCANDESCENT	EA	1
C-3	3	PAOZZ	5355-00-781-0319	MS91525-3	96906	KNOB	EA	1
C-3	4	PAOZZ	5305-00-865-3895	MS21090-0621	96906	SCREW, SELF-LOCKING	EA	2
C-3	5	PAOZZ	5935-00-933-3752	SMB104328	80063	CAP, DUST	EA	2
C-3	6	XDOZZ		SMD415270	80063	COVER ASSEMBLY	EA	1
C-3	7	PAOZZ	5310-00-823-5837	SMC413884-7	80063	SCREW, MACHINE	EA	4
C-3	8	PAOZZ	5310-00-045-3296	MS35338-43	96906	WASHER, SPLIT	EA	4
C-3	9	PAOZZ	5306-00-225-9089	MS90726-34	96906	SCREW: PART OF KIT P/N SMB415234	EA	3
C-3	10	PAOZZ	5310-00-582-5615	MS35690-522	96906	NUT: PART OF KIT P/N SMB415234	EA	3
C-3	11	PAOZZ	5310-00-889-2527	MS45904-72	96906	WASHER, LOCK: PART OF KIT P/N SMB415234	EA	6
C-3	12	PAOZZ	5355-00-853-6384	SMC414399	80063	KNOB	EA	1
C-3	13	PAOZZ	5310-00-853-9676	SMB414395	80063	NUT, SLEEVE	EA	1
C-3	14	PAOZZ	5355-00-823-9809	SMD415223	80063	KNOB	EA	1

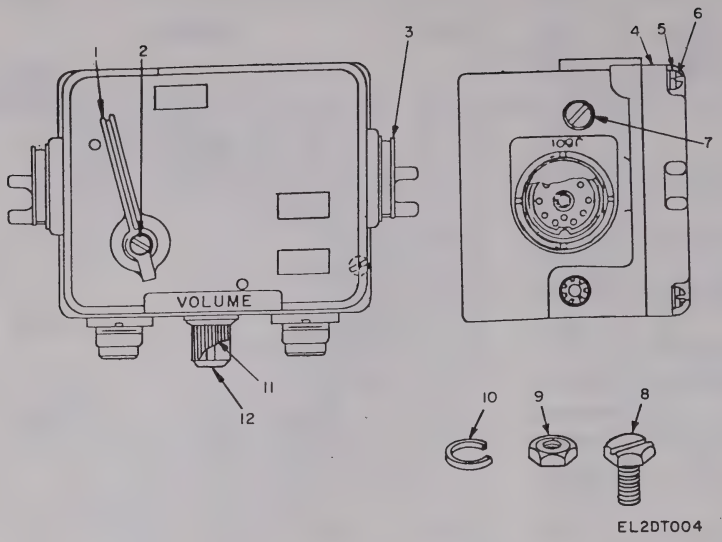

Figure C-4. Control, Intercommunication Set C-2298/VRC.

SECTION II REPAIR PARTS LIST (CONTINUED)

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION USABLE ON CODE	(7) UNIT OF MEAS	(8) QTY INC IN UNIT
						GROUP: 04 CONTROL, INTERCOMMUNICATIONS SET C-2298/VRC		
C-4	1	PAOZZ	5355-00-823-9809	SMD415223	80063	KNOB	EA	1
C-4	2	PAOZZ	5305-00-865-3895	MS21090-0621	96906	SCREW	EA	1
C-4	3	PAOZZ	5935-00-933-3752	SMB104328	80063	CAP, DUST	EA	2
C-4	4	XDOZZ		SMD415270	80063	COVER ASSEMBLY	EA	1
C-4	5	PAOZZ	5310-00-045-3296	MS35338-43	96906	WASHER, SPLIT	EA	4
C-4	6	PAOZZ	5310-00-823-5837	SMC413884-7	80063	SCREW, MACHINE	EA	4
C-4	7	PAOZZ	5305-00-245-8836	SMC414131-2	80063	SCREW, MACHINE	EA	1
C-4	8	PAOZZ	5306-00-225-9089	MS90726-34	96906	SCREW: PART OF KIT P/N SMB415268	EA	3
C-4	9	PAOZZ	5310-00-582-5615	MS35690-522	96906	NUT: PART OF KIT P/N SMB415268	EA	3
C-4	10	PAOZZ	5310-00-889-2527	MS45904-72	96906	WASHER, LOCK: PART OF KIT P/N SMB415268	EA	6
C-4	11	PAOZZ	5355-00-853-6384	SMC414399	80063	KNOB	EA	1
C-4	12	PAOZZ	5310-00-853-9676	SMB414395	80063	NUT, SLEEVE	EA	1

SECTION IV NATIONAL STOCK NUMBER AND PART NUMBER INDEX

STOCK NUMBER	FIG. NO.	ITEM NO.
5310-00-045-3296	C-1	9
5310-00-045-3296	C-2	2
5310-00-045-3296	C-3	8
5310-00-045-3296	C-4	5
6240-00-155-7836	C-1	4
6240-00-155-7836	C-3	2
5306-00-225-9089	C-1	5
5306-00-225-9089	C-2	8
5306-00-225-9089	C-3	9
5306-00-225-9089	C-4	8
5305-00-245-8836	C-2	4
5305-00-245-8836	C-4	7
5310-00-582-5615	C-1	6
5310-00-582-5615	C-2	9
5310-00-582-5615	C-3	10
5310-00-582-5615	C-4	9
5935-00-656-1358	C-1	3
5355-00-781-0319	C-3	3
5310-00-823-5837	C-1	10
5310-00-823-5837	C-2	1
5310-00-823-5837	C-3	7
5310-00-823-5837	C-4	6
5355-00-823-9809	C-3	14
5355-00-823-9809	C-4	1
5355-00-853-6384	C-2	6
5355-00-853-6384	C-3	12
5355-00-853-6384	C-4	11
5310-00-853-9676	C-2	7
5310-00-853-9676	C-3	13
5310-00-853-9676	C-4	12
5305-00-865-3895	C-1	2
5305-00-865-3895	C-3	4
5305-00-865-3895	C-4	2
5310-00-889-2527	C-1	7
5310-00-889-2527	C-2	10
5310-00-889-2527	C-3	11
5310-00-889-2527	C-4	10
6210-00-892-4455	C-3	1
5935-00-933-3752	C-1	1
5355-00-933-3752	C-2	5
5935-00-933-3752	C-3	5
5935-00-933-3752	C-4	3

STOCK NUMBER	FIG. NO.	ITEM NO.

SECTION IV NATIONAL STOCK NUMBER AND PART NUMBER INDEX (CONTINUED)

PART NUMBER	FSCM	FIG. NO.	ITEM NO.
MS1525-2	96906	C-1	3
MS21090-0621	96906	C-1	2
MS21090-0621	96906	C-3	4
MS21090-0621	96906	C-4	2
MS25237-327	96906	C-1	4
MS25237-327	96906	C-3	2
MS35338-43	96906	C-1	9
MS35338-43	96906	C-2	2
MS35338-43	96906	C-3	8
MS35338-43	96906	C-4	5
MS35690-522	96906	C-1	6
MS35690-522	96906	C-2	9
MS35690-522	96906	C-3	10
MS35690-522	96906	C-4	9
MS45904-72	96906	C-1	7
MS45904-72	96906	C-2	10
MS45904-72	96906	C-3	11
MS45904-72	96906	C-4	10
MS90726-34	96906	C-1	5
MS90726-34	96906	C-2	8
MS90726-34	96906	C-3	9
MS90726-34	96906	C-4	8
MS91525-3	96906	C-3	3
SMB104328	80063	C-1	1
SMB104328	80063	C-2	5
SMB104328	80063	C-3	5
SMB104328	80063	C-4	3
SMB414395	80063	C-2	7
SMB414395	80063	C-3	13
SMB414395	80063	C-4	12
SMC413884-7	80063	C-1	10
SMC413884-7	80063	C-2	1
SMC413884-7	80063	C-3	7
SMC413884-7	80063	C-4	6
SMC414131-2	80063	C-2	4
SMC414131-2	80063	C-4	7
SMC414399	80063	C-2	6
SMC414399	80063	C-3	12
SMC414399	80063	C-4	11
SMC415292	80063	C-1	8
SMD415223	80063	C-3	14
SMD415223	80063	C-4	1
SMD415254	80063	C-2	3
SMD415270	80063	C-3	6
SMD415270	80063	C-4	4
203-0113-203	72619	C-3	1

PART NUMBER	FSCM	FIG. NO.	ITEM NO.

DEPARTMENT OF THE ARMY
US ARMY AG PUBLICATIONS CENTER
1655 WOODSON ROAD
ST. LOUIS, MISSOURI 63114

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314

U.S.MAIL